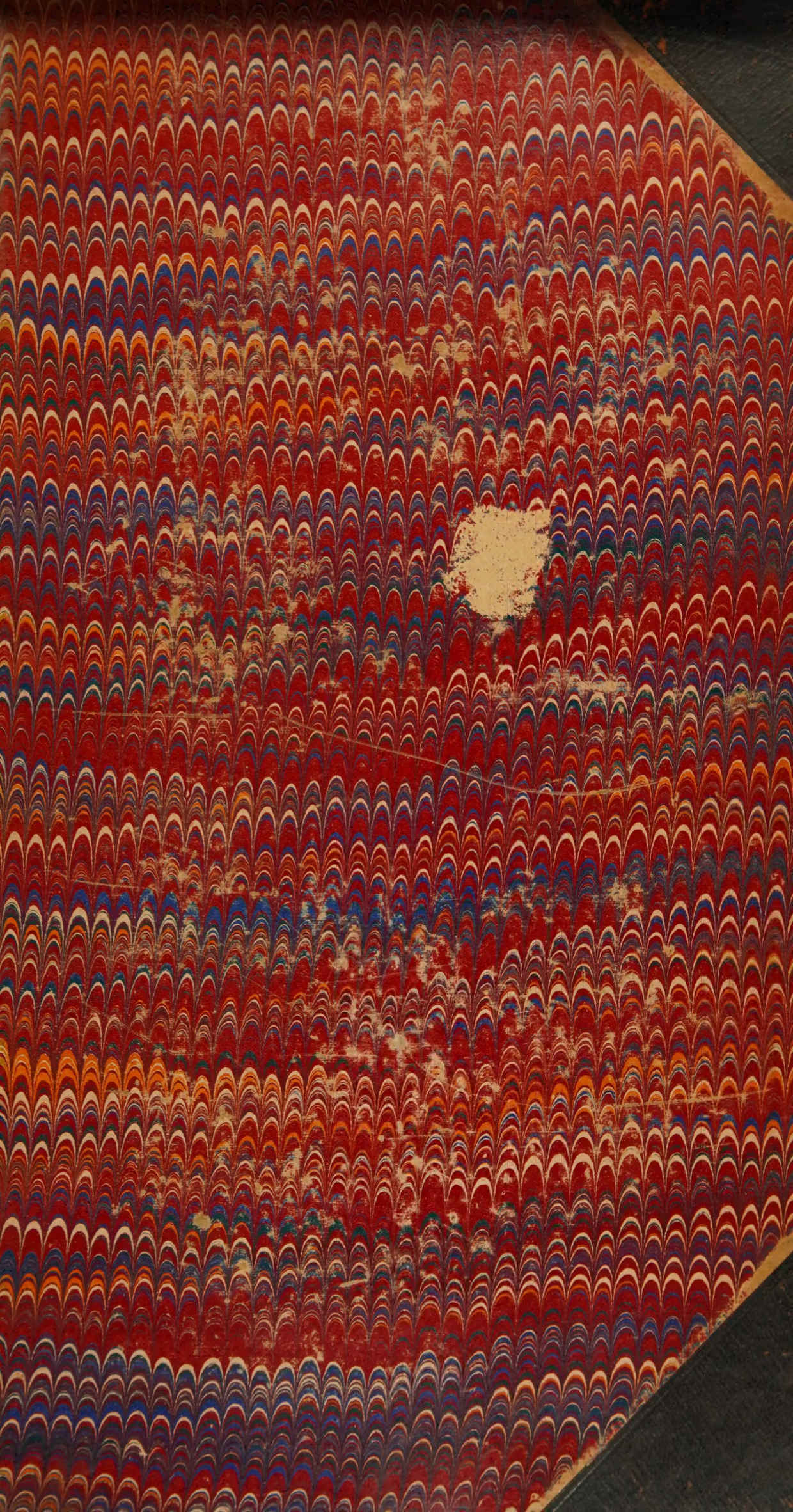

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RESULTS

OF THE

MAGNETICAL, NAUTICAL,

AND

METEOROLOGICAL OBSERVATIONS

MADE AND COLLECTED

AT THE FLAGSTAFF OBSERVATORY, MELBOURNE, AND AT VARIOUS STATIONS IN THE COLONY OF VICTORIA.

MARCH, 1858, TO FEBRUARY, 1859.

PRESENTED TO BOTH HOUSES OF PARLIAMENT BY HIS EXCELLENCY'S COMMAND

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By Authority:
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No. 32.

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to

The Chief Signal Officer,

Washington, U. S. A.

c/cx
A05

TO SIR HENRY BARKLY, K.C.B.,

CHAIRMAN OF THE BOARD OF VISITORS TO THE MAGNETICAL, NAUTICAL, AND METEOROLOGICAL OBSERVATORY, GOVERNOR GENERAL OF THE COLONY OF VICTORIA, &c.

Sir,

I have the honor to transmit to Your Excellency the accompanying Report and Tables, containing a Summary of the Results of Observations made during the Year 1858–59 in the various Observatories under my direction.

I have the honor to be,
Your Excellency's most obedient Servant,

GEORGE NEUMAYER.

Flagstaff Observatory,
June, 1860.

PREFACE.

Deeply impressed with the importance of observations calculated to advance the science of Terrestrial Magnetism, and convinced that the rapid and enlightened progress of the Colony of Victoria would ensure for physical science a powerful support in the Southern hemisphere, I resolved, on my visit to the Australian Continent during the years 1852 and 1853, to return, after remaining in Europe only so long as would be required to make the necessary preparations for the task of establishing an Observatory in Melbourne.

On my arrival in Europe I was fortunate enough to meet everywhere with sympathies for my plans; and it was the enlightened liberality of His Majesty King Maximilian II. of Bavaria which secured to the undertaking a speedy execution. Provided with a most excellent collection of magnetical, nautical, and meteorological instruments, I left Europe, after having received a most cordial and valuable support from the Senate and the Commercium of the free City of Hamburg, and landed in this Colony on the 27th of January, 1857.

The kind manner in which I was received almost universally on my arrival in this Colony, the warm support I obtained from the Chamber of Commerce of Melbourne and the Press, confirmed me in the conviction which I had formed at the time of my previous visit, that science would find on these shores a home and a favorable ground whereupon to grow and to be cultivated; and I take this opportunity to express my gratitude for all the sympathy shown to me personally, and to the cause of the science I have made the study of my life. When speaking of the time prior to the working of the Observatory, the duty devolves upon me thankfully to make mention of the handsome and energetic manner in which my countrymen, the Germans resident in this Colony, came forward in support of my views, raising by subscription amongst themselves the sum of £500 towards the erection and organization of this Observatory.

Although my proposals for the erection of an Observatory for the advancement of physical science had been made to the Government of this Colony on the 15th of June, 1857, it was not until the end of that year that funds were granted by the Legislature and steps taken to proceed with the organization of the institution.

The selection of a site was a matter of considerable difficulty, and as particular attention was to be paid to the demands of the science of terrestrial magnetism, I devoted the whole of the months of September, October, and November, 1857, to investigations calculated to throw light upon the relations of the various localities around Melbourne as regarded their fitness for observations on the magnetic elements. The results of these observations made it incumbent upon me to recommend to the Government that a piece of land on the southern side of the River Yarra, on the hill near the reserve of the Botanical Garden, should be granted for the Observatory, that being the only spot which I found, in every respect, suitable for the purpose.

It was not, however, deemed advisable, at that time, to grant the site proposed, and thus it happened that temporary arrangements were made on the Flagstaff Hill, using the buildings of the late Signal Station for offices and quarters.

Systematical observations could not be commenced until the 1st of March, 1858, and then only in the meteorological branch and in navigation. The observations on terrestrial magnetism began with the 1st of May in the same year, and notwithstanding the small sum granted for the Observatory during the year 1858, the plan of working, as described in the following pages, was adopted and carried through in its integrity, and I would humbly add that this could not have been effected without considerable self-denial on the part of the staff, consisting only of myself and two assistants, whose names I feel great pleasure in mentioning, namely, Messrs. J. Bauer and J. W. Osborne. At the commencement of the year 1859 the position of the Observatory was considerably improved, the Legislature having granted a sum of money more adequate to the requirements of the institution; and on the 1st of March, 1859, the anniversary of its opening, its efficiency was again increased by the meteorological stations in the country having been placed under my direction.

At the conclusion of the first year's observations, it became my earnest desire to give a report on the labors of the Observatory, but this was a task of a peculiarly difficult nature, in consequence of the whole of the registrations having been obtained in French measure. As I did not think myself justified in bringing before an English public results of observations in foreign measure, and as it was impossible, with the staff at my command, to reduce the whole bulk of observations into the English standard, I resolved, with the approval of the Honorable J. O'Shanassy, then Chief Secretary, to publish an extract of the observations made, and to withhold the publication of the original observations for a future occasion.

The leading principles according to which this task has been carried out are as follows :—

1. To give the principal features of the meteorology of this Colony—firstly, in daily means, deduced from hourly observations on the various meteorological elements made at the Flagstaff Observatory; secondly, in five days' means; and thirdly, in monthly summaries.

2. To give at considerable length the diurnal variations in the different meteorological elements, as well as to exhibit the influence of the direction of the wind upon the various meteorological instruments.

3. To give a complete copy of the following registrations—namely, the simultaneous observations with the hygrometers of August and Döbereiner-Regnault; the halos throughout the year; the zodiacal light and meteors; the upper currents of the air; all cases where the atmospheric electricity was negative; and a complete registration of magnetic storms and Aurora Australis.

4. To supply a nautical report containing some of the most interesting results of the labors of the Observatory in this direction, refraining, for the present, however, from giving copies of the registrations kept, according to Maury's principles, the time of registration being too short to give them that value which a greater series will ultimately possess.

5. To furnish a short report on the observations made on terrestrial magnetism.

In reference to the latter branch of this report I take this opportunity to state that I could have added a large number of observations, forming parts of the Magnetic Survey of the Colony, if I had not considered it better to publish the whole in one volume as soon as the observations shall be completed. Publication in fragments would be calculated to impair the value of the work.

The fact that the reduction of the observations into English measure and the arrangement of the results from the journals of the country stations could not possibly be completed before August, 1859, as my attention then was directed towards the organization of a uniform system of meteorological observations throughout the country, according to the system adhered to in the Flagstaff Observatory, retarded the publication of this report very much. To this cause of delay was added my frequent absence from town on behalf of the Magnetic Survey; and the manuscript could, for all these reasons, not be placed in the hands of the Government Printer before the month of November, 1859.

It is evident that this present report falls far short of doing full justice to the extensive labors of the Observatory. To this end the observations ought to have been published in full, which, however, could not have been done for the reasons above enumerated, and so I hand over to the people of this Colony, and to the scientific world at large, these short outlines of the objects I have endeavored to accomplish, feeling satisfied with having thereby given evidence as to the usefulness of the institution both for practical knowledge and theoretical speculation.

Great as is the field of research great also should be our exertions to gain an approach towards the truth; and in order never to slacken in our zeal, we should bear in mind what the great philosopher said, whose death we recently lamented, and I may be permitted to conclude these few remarks with a quotation from the second volume of his Cosmos :—

"Weak minds complacently believe that in their own age humanity has reached the culminating point of intellectual progress; forgetting that by the internal connection existing among all natural phenomena, in proportion as we advance the field to be traversed acquires additional extension, and that it is bounded by an horizon which incessantly recedes before the eyes of the enquirer."

GEORGE NEUMAYER.

Flagstaff Observatory,
June, 1860.

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EXPLANATION OF DIAGRAMS.

With the view of facilitating the deduction of satisfactory conclusions from the following Tables and Diagrams, it appears desirable to state a few facts in reference to the geographical position of the Flagstaff Observatory.

From several sets of observations, made on various occasions, the position of the Observatory was found to be in

Latitude 37° 48′ 45″ south;

Longitude 9h. 39m. 53s. east of Greenwich.

The hill on which it is erected is situated on the N.W. side of Melbourne, the chief portion of the city bearing between N.E. and E.S.E.; there are, however, buildings in every direction, especially in the N.N.W. and S. Notwithstanding the slight elevation of the hill, (the cistern of the barometer being only 120·7 feet above the level of the sea,) it commands a distant view all around the horizon, being only bounded by the sea in one direction, and in others by mountain chains at an average distance of twenty miles. The large sheet of water forming Port Phillip and Hobson's Bay is situated between the points S.W. by W. and S.S.E., whilst that triangular-shaped portion of Bass's Straits between its extremities, Wilson's Promontory, and Cape Otway, bears S.W. ½ W. and S.E. ½ S. A line drawn N.W. by W. will touch the northernmost point of the great Australian Bight, coinciding at the same time with the dividing range of this Colony, from Ballaarat to where it bends at right angles to its former direction. The country to the south of this line is generally low and level. The axis of the dividing range to the east of Port Phillip; running E.N.E., passes nearly through Melbourne; so that the bearings of the most elevated points, which are frequently covered with snow, is E.N.E. ½ N. Between these two lines, N. 60° W. and N. 60° E., the coast ranges extend; and beyond them, in the same direction, are the valleys and plains of the Murray. A spur of the dividing ranges, terminating in Wilson's Promontory, causes the country lying immediately to the east of Melbourne to be rather hilly and uneven.

The above remarks will prove of considerable interest to any one perusing the tables given in the paragraph which treats on the Windroses, and on the influence which the direction of the wind exerts on the various meteorological elements.

Before proceeding with the description of the single Diagrams it is necessary to state here that, after the printing of the tables forming this Report, it was found, that in reducing the rain-fall for *Melbourne* from French into English measure, a slight error had occurred. For this reason, all amounts of *rain for Melbourne* (Monthly Abstracts, from April, 1858, to February, 1859; and Table, section 74; Summary X.; Five-day Means for the same period; and also Monthly Summaries, including Comparative Tables,) are to be multiplied by 1·108, (Log. 1·108 = 0·04454).

According to this, the following corrected Rain Table for Melbourne was computed, containing the amounts for the five-day periods from the 1st April, 1858, to the 1st March, 1859, as well as for the single months, from April, 1858, to February, 1859:—

DATE.	PERIODS.							SUMS.
1858.								
April	1st to 5th In. 0·025	6th to 10th In. 0·076	11th to 15th In. 0·003	16th to 20th In. 0·011	21st to 25th In. 0·050	26th to 30th In. 0·434	...	In. 0·599
May	1st to 5th 0·000	6th to 10th 0·499	11th to 15th 0·254	16th to 20th 0·202	21st to 25th 0·028	26th to 30th 0·401	...	1·384
June	31st to 4th 0·018	5th to 9th 0·046	10th to 14th 0·075	15th to 19th 0·000	20th to 24th 0·092	25th to 29th 0·075	30th to 4th 0·455	0·761
July	5th to 9th 0·445	10th to 14th 0·691	15th to 19th 0·095	20th to 24th 0·176	25th to 29th 0·597	30th to 3rd 0·068	...	2·072
August	4th to 8th 0·028	9th to 13th 0·637	14th to 18th 0·396	19th to 23rd 0·053	24th to 28th 0·047	29th to 2nd 0·454	...	1·615
September	3rd to 7th 0·404	8th to 12th 0·721	13th to 17th 0·259	18th to 22nd 0·156	23rd to 27th 0·367	28th to 2nd 0·264	...	2·171
October	3rd to 7th 0·000	8th to 12th 0 055	13th to 17th 0·182	18th to 22nd 0·534	23rd to 27th 0·037	28th to 1st 0·061	...	0·869
November	2nd to 6th 0·212	7th to 11th 0·447	12th to 16th 0·843	17th to 21st 0·019	22nd to 26th 0·070	27th to 1st 1·601	...	3·192
December	2nd to 6th 0·070	7th to 11th 1·172	12th to 16th 1·418	17th to 21st 3·230	22nd to 26th 0·184	27th to 31st 0·399	...	6·473
1859.								
January	1st to 5th 0·000	6th to 10th 0·790	11th to 15th 0·130	16th to 20th 0·504	21st to 25th 0·227	26th to 30th 1·210	...	2·861
February	31st to 4th 0·000	5th to 9th 0·224	10th to 14th 0·299	15th to 19th 0·108	20th to 24th 0·191	25th to 1st 0·005	...	0·827

The total amount of rain for the period over which this report extends is 23·914 inches. In arriving at this result, due regard was given to the fact that the above remarks do not apply to the amount for March, 1858. The amounts of rain, as given in this paragraph, need no further reduction.

Tables I. to XII.—Contain the curves of the daily means in temperature of air, pressure of air, relative humidity, positive atmospheric electricity, force of wind, amount of cloud, and the fall of rain; and in addition to these the curves of the extremes in temperature of air and pressure of air, and the mean direction of the wind attached to the barometric curve, the direction being understood "*with the arrows*." Barometer, thermometer, and hygrometer curves contain, in each case, the mean of the respective month and the mean of the whole year; the former is indicated by a plain, and the latter by a dotted line. In atmospheric electricity, the mean of the month only could be shown, as the observations of this meteorological element extend only over a period of 10½ months.

Table I.—*Month of March*, 1858.—The means for the month in temperature of air, pressure of air, and relative humidity, are respectively 7°·01 above, 0·065 inch above, and 0·059 (0—1) below the respective means of the year.

Table II.—*Month of April*, 1858.—The means for the month in temperature of air, pressure of air, and relative humidity, are respectively 0°·88 above 0 153 inch above, and 0·016 (0—1) below the respective means for the year.

Table III.—*Month of May*, 1858.—The means for the month in temperature of air, pressure of air, and relative humidity, are respetively 3°·63 below, 0·050 inch above, and 0·085 (0—1) above the respective means for the year. Very interesting is, in this case, the barometrical curve, which shows a remarkable depression between the 6th and the 18th, due to a succession of heavy northerly gales.

Table IV.—*Month of June*, 1858.—The means for the month in temperature of air, pressure of air, and relative humidity, are respectively 9°·89 below, 0·160 inch above, 0·122 (0—1) above the respective means for the year. In uniformity with the monthly abstracts for June, this diagram contains one period of five days more than usual.

Table V.—*Month of July*, 1858.—The means for the month in temperature of air, pressure of air, and relative humidity, are respectively 9°·95 below, 0·047 inch above, 0·116 (0—1) above the respective means for the year. There was a heavy fall of rain on the 12th, viz., 0·557 inch.

Table VI.—*Month of August*, 1858.—The means for the month in temperature of air, pressure of air, and relative humidity, are respectively 6°·93 below, 0·093 inch below, 0·040 (0—1) above the respective means for the year. Very interesting in this case is the great similarity between the curves for pressure of air and positive atmospheric electricity. The greatest fall of rain during the month was 0·431 inch on the 11th.

Table VII.—*Month of September*, 1858.—The means for the month in temperature of air, pressure of air, and relative humidity, are respectively 6°·24 below, 0·095 inch below, 0·020 (0—1) above the respective means for the year. The barometrical curve shows two great depressions, viz., on the 14th and on the 23rd, both being due to heavy northerly gales. The greatest fall of rain during this month was 0·489 inch on the 11th.

Table VIII.—*Month of October*, 1858.—The means for the month in temperature of air, pressure of air, and relative humidity, are respectively 0°·01 above, 0·056 inch above, 0·026 (0—1) below the respective means for the year. The greatest fall of rain was on the 20th, viz., 0·494 inch.

Table IX.—*Month of November*, 1858.—The means for the month in temperature of air, pressure of air, and relative humidity are respectively 5°·29 above, 0·048 inch below, 0·056 (0—1) below the respective means for the year. In this case the scale for the height of the curve of temperature of air had to be reduced to half the size of the other months on account of the great range in this meteorological element. Heavy rain on the 13th, viz., 0·642 inch; and on the 30th, viz., 0·950 inch.

Table X.—*Month of December*, 1858.—The means for the month in temperature of air, pressure of air, and relative humidity, are respectively 5°·67 above, 0·146 inch below, 0·062 (0—1) below the respective means for the year. Exceedingly interesting is the great depression in the barometrical curve on the 19th, on which day a heavy storm occurred (*See* page 166, section 149). Heavy rain on the 19th, viz., 1·623 inch; on the 12th, viz., 1·417 inch; on the 8th, viz., 1·125 inch, and on the 20th, viz., 1·123 inch.

Table XI.—*Month of January*, 1859.—The means for the month in temperature of air, pressure of air, and relative humidity are respectively 9°·75 above, 0·072 inch below, 0·065 (0—1) below the respective means for the year. Heavy rain was observed on the 26th, viz., 1·156 inch; and on the 9th, viz., 0·568 inch.

Table XII.—*Month of February*, 1859.—The means for the month in temperature of air, pressure of air, and relative humidity are respectively 7°·25 above, 0·073 inch below, 0·098 (0—1) below the respective Means for the year. In this case the same applies with reference to the scale of the height at the temperature curve as mentioned in the month of November.

Table XIII. represents the horary variations in temperature of air; the figures in the margin indicate the mean temperature of air at midnight for the different months. Some of the morning hours are repeated in order to show the continuation of the curve. Each part of division indicates one degree. The diurnal curves of temperature of air and temperature of surface soil for the whole year will be found at the foot of this table, the former being indicated by a plain line, the latter by a dotted one. The yearly means are entered correspondingly.

Table XIV. represents the diurnal curves of pressure of air for each month, each part of division signifying 0·010 of an inch. In cases of a rapid decrease or increase in the atmospheric pressure at the end of the month, considerable irregularities may be found in the curve between 11 p.m. and midnight, if simply the mean value for midnight is repeated, as is indicated by the dotted curve: to avoid this, the mean difference of the hours of 11 p.m. and midnight has been taken for each month and the result is shown by the plain curve. At the foot of this table two other curves are given, the one representing the diurnal oscillations of pressure of air, the other that of pressure of dry air.

Table XV. represents the diurnal curves for pressure of vapor for each mouth, each part of division signifying 0·010 of an inch; moreover, the mean diurnal curve for pressure of vapor, amount of cloud, and force of wind for the whole year. With regard to the two latter elements, particular attention may be drawn to the great regularity of the curves, showing for amount of cloud, $7^{h.}$ a.m. to be a maximum, and $9^{h.}$ p.m. a minimum; and for force of wind, $1^{h.}$ p.m. to be a maximum, and $1^{h.}$ a.m. a minimum.

Table XVI represents the horary variation in positive atmospheric electricity for each month, each part of division signifying one part of division of Quetelet's electrometer; the mean diurnal curve for the year is also represented. The last diagram represents the yearly mean number of hours of rain for each hour during the twenty-four, clearly showing a maximum for duration of rain at $2^{h.}$ a.m., and a minimum at noon.

The plates headed "Mean direction of the Wind," represent the motion of the mean direction of the wind, with the view of illustrating the law of the turning of the wind. The principle according to which these curves have been drawn, is simply this: the first day of the month is near the centre, the last at the circumference. Whenever the mean direction of the wind shifted in the sense N., W., S., E. (direct), it is indicated by a plain line, when it shifted in the sense N., E., S., W. (retrograde), by a dotted one. In cases where the mean direction of the wind shifted from one point of the compass to the opposite one, it was ascertained from the registers in which direction the turning took place: in all other cases it was adopted that it went the shorter route.

The plate headed "Windroses," contains the windroses for eight different meteorological elements; as these are derived from the tables in the paragraph having reference to this particular subject, there is no necessity for entering into any further explanation.

Attention may again be drawn to the remarks found in the introduction to this paragraph, with regard to the peculiarities of the site of the Observatory, and the irregularities in these curves caused by local influences.

METEOROLOGY.

I.—INTRODUCTION.

1. The observations made upon meteorological phenomena have been carried on without interruption since the 1st of March, 1858, the erection of the several buildings being then so far advanced as to admit of systematic labors being commenced in this department of the Observatory. The registrations were made every hour during the twenty-four, not excepting Sundays or holidays.

2. The instruments made use of were divided according to the methods prevalent on the Continent, which rendered necessary the subsequent reduction of the readings to English measure.

3. The barometer was of Fortin's construction, executed in the workshop of J. Lohmeier, in Hamburg. The scale of this instrument is divided into Parisian lines, tenths, and hundredths, and it was suspended as marine barometers usually are: the heavy cistern ensuring its perpendicularity. A thermometer, graduated according to Réaumur, was let into the brass tube of the barometer, which was placed in a room where it was carefully protected from sudden changes of temperature, the room itself being also well sheltered from the direct rays of the sun. The cistern was 120·7 feet above the mean level of the sea.

4. The index-error of this instrument was frequently checked by means of an excellent mountain barometer (Greiner, 111,) of Gay Lussac's construction, which had been compared with the standards of Munich, Berlin, and Hamburg; and also, after my arrival in this Colony, with the standard of the Meteorological Observatory in the offices of Crown Lands. The comparison of "Greiner, 111," with Professor Dove's standard at Berlin was effected on the 24th of June, 1856, and the correction was found to be − 0·10 Parisian lines, which value was to be subtracted from the readings. A comparison with the Hamburg standard gave a similar result, namely − 0·05 Parisian lines, while that made in Munich showed a slight difference; but as the latter place is much higher above the level of the sea (viz., 1660 Par. ft., = 1769 Eng. ft.) than the other localities and the Flagstaff Observatory, we may easily account for a slight difference, and adopt the values given above as the true correction for "Greiner, 111"—the more so as they exactly coincide with the quantities obtained from the comparison made with the standard of the Melbourne Meteorological Observatory in the year 1857.

With the help of this barometer, the correction for "Fortin, 108," was found to be almost constantly + 0·30 Par. lines (= + 0·027 inch).

5. The exact time of registering the barometer was one minute before the full hour.

6. The corrections applied to the readings were those for index-error, temperature, and capillary action.

7. The thermometers used were from the workshop of the Royal Observatory, Munich, and had been compared with the Munich and Kew standards. The index-errors of the several instruments were frequently re-examined and the corrections have been applied to the various readings. The scales were all divided into Réaumur degrees, and a reduction was consequently required to enable me to give the values according to Fahrenheit's division.

8. The standard thermometer used to determine the temperature of air in shade was attached to a stand similar to that constructed by Lawson, save that it is placed upon a platform about five feet high, whereby the bulb of the thermometer is raised nearly ten feet from the ground; a precaution very much to be recommended in a country like this, where the soil assumes so high a temperature. A flagstaff passed through both platform and stand, in such a way as to admit of the latter being turned round it.

9. Close to the standard, the thermometer was placed, which was used for obtaining the temperature of evaporation.

The following is the mode of observation:—The bulb of the thermometer is covered with gauze, which is moistened with water by means of a little spoon whenever an observation is to be made. The general rule which has been adopted is to moisten the bulb five minutes before the time of reading, this interval requiring occasional modification, according to wind and weather. After the moistening is effected, the stand is turned for a few seconds, so as to face the wind, whereby the air is made to circulate freely about the bulbs and through the air spaces of the stand, and the evaporation is facilitated in the first instance; the stand is then turned back to such a position that its face, bearing the instruments, is sheltered from the direct force of the wind as well as from the effects of the sun, and left undisturbed until the time of registration.

Care was taken at the the time of moistening this thermometer to remove any drop of water hanging from the bulb, and the gauze on the same was frequently renewed.

10. The pressure of vapor has been computed according to August's formula, viz.:—

$$x = \frac{e - 0.0009729\ d\ (b - c)}{1 + 0.001925\ d}$$

d signifies the psychrometrical difference, b the pressure of air, and e the tension of vapor for the temperature of the wet bulb, taken from M. Regnault's tables.

11. At the commencement of the year 1859 a hygrometer, according to Döbereiner-Regnault's construction, was placed on the meteorological stand beside the dry and wet bulb thermometers. With this instrument the dew-point could be determined at any moment with the utmost facility and accuracy, the aspirator made use of being kept continually full of water. The systematic registrations of the dew-point were made at midnight, 3 A.M., 6 A.M., 9 A.M., at noon, 3 P.M., 6 P.M., and 9 P.M.

12. The black bulb thermometer was exposed to the full action of the solar heat, without sheltering it from the action of the wind. To effect this the thermometer was supported by a light frame of wood, attached in such a way to an arm from the back of the stand as to admit of motion in every direction; the frame was also provided with a diopter, by means of which the thermometer could be placed at right angles to the direction of the sun's rays, a precaution which was considered necessary, as the blackened bulb was a long cylindrical one. In the tables will be found the maximum reading for those days on which the sun was visible.

13. The temperature of soil was taken with a horizontal thermometer, the bulb of which was just covered with sand, the same being fully exposed to the action of sun and wind.

14. The directions of the wind have been registered by the help of a very delicate weather vane, mounted on the top of the flagstaff which passes through the meteorological platform and stand. By means of a vertical quadrant, firmly attached to one of the sides of the moveable meteorological stand, the bearings of several objects in the distance, as viewed from the centre of the stand, have been frequently determined by observations of equal altitudes, while the circular plate on which the stand revolves acts the part of a limbus. By this arrangement the direction of the wind can be ascertained exactly, to within half a point; the observations will be found recorded from point to point.

15. To express the Force of Wind, Beaufort's notation has been used, viz., from 1 to 12; and in computing the Mean Direction of the Wind for the day, Lambert's formula has been employed, viz.:—

$$\text{Tang. } \phi = \frac{a + b \cos. 45° 0' + c \cos. 22° 30' + d \cos. 67° 30'}{\alpha + \beta \cos. 45° 0' + \gamma \cos. 67° 30' + \delta \cos. 22° 30'}$$

The meaning of the various factors is well known to every one and does not require any further remark. The sense in which the mean direction is given is S. SE. E. NE. N. NW. W. SW. S. S. being equal to 0° or 360° and N. 180°. The "mean force," as given in the monthly abstract, represents only the mean of all registered forces, and is not the resultant belonging to the "mean direction." The "mean directions" and the resultants for the single months and for the year have been separately computed according to two different methods: first, according to Lambert's formula, the relative frequency of the winds being taken as components; secondly, according to the formula—

$$\text{Tang. } \phi = \frac{\Sigma (P . \sin. a)}{\Sigma (P . \cos. a)} \quad \text{and} \quad R = \sqrt{(P_o^2 + Q_o^2)}$$

$$\text{wherein, } Q_o = \Sigma (P . \sin. a) = P.' \sin. a' + P.'' \sin. a'' + \ldots\ldots P.^n \sin. a^n,$$

$$\text{and, } P_o = \Sigma (P . \cos. a) = P.' \cos. a' + P'' \cos. a'' + \ldots\ldots P.^n \cos. a^n.$$

16. In the month of November, 1858, an anemometer on Osler's principle was erected and registered, but from several imperfections in its construction greater reliance was placed upon the direct readings of the weather vane.

17. The Raingauge, placed seven feet above the ground, consisted of a copper vessel cased externally with wood, and offering an open horizontal section for the reception of the rain, of one square foot (Paris measure). The funnel terminated below in a glass tube, 18 inches long, which conveyed the water through a closely fitting cork, into a bottle the weight of which had been accurately determined. At six o'clock morning and evening, the bottle was removed and weighed, and from the weight of the water the height of the fall upon the square foot (English) was calculated and expressed in inches, tenths, &c. In addition to the determination of the rainfall, even when very slight, the quantities of precipitated moisture in the form of fog, dew, and hail, have by means of this instrument been frequently observed and noted.

18. The observations on atmospheric electricity were commenced on the 15th of April, 1858, the electrometer used being on Quételet's principle, improved by Lamont. The stand of this instrument was attached to a brick wall in such a way as to prevent the readings being influenced by any accidental vibration, and was at the same time so situated as to allow of the top of the electrometer being carried to and from a platform on the roof of the observatory with the least possible loss of time. The observations were taken by registering both ends of the needle, and by three readings on each side of the magnetic meridian. The first reading (a) was usually taken with the northward end of the needle diverging towards W.; the second (b) when it diverged towards E.; and the third (c) when the northward end was made to diverge towards W. again. The interval between the separate readings was one minute, measured with a sandglass, and the method of correcting the observations for index-error and loss were thus considerably simplified, viz.:—

$$\frac{a + c}{2} = n; \quad \frac{n + b}{2} = m; \; a - c = \Delta; \; m + \Delta = x; \; x \text{ being the true tension.}$$

The electric tension was occasionally too large to admit of measurement; in such a case the endeavor was made to obtain a spark from the instrument, and the observation was recorded by using the sign ∞. The quality of the electric fluid contained in the insulated electrometer was ascertained by using a stick of sealing-wax excited by friction; the result checked when necessary by means of a glass bar similarly applied.

19. Schönbein's ozonometer was used in making observations on the ozonic reaction; the ozone paper was suspended in a tin box which admitted of a free circulation of air, but in which it was protected from the direct action of the sun's rays and from rain. The cylindrical box, nine inches high and four inches in diameter, was

hoisted to the top of the flagstaff, 33 feet above the ground. The ozone papers were exposed from 6 a.m. till 6 p.m., and from 6 p.m. till 6 a.m. From the 1st of November until the 1st March two more papers were exposed under the same circumstances, the one for three, the other for six hours, both commencing at midnight.

20. The form of clouds is given in Howard's nomenclature, and the amount of cloud in the usual way, registering the sky when clear as 0 and when completely overcast as 10, and estimating the intermediate amounts.

21. The situation of that portion of the ground within the Observatory enclosure occupied by Meteorological instruments, is the highest on the Flagstaff Hill; none of the buildings interfere in any way with a free circulation of air, nor does reflected light or heat act directly upon the thermometers so as to influence the reading.

II.—DAILY ABSTRACT FOR THE YEAR ENDING 1st MARCH, 1859.

22. The year has been divided into periods of *five days* in accordance with the plan of the Meteorological Institute of Prussia. If six of these periods be taken as a meteorological month, commencing with the 1st of January, and we carry this arrangement strictly through the year, we shall find that the month of March begins with the 2nd and ends with the 31st, that of April coincides with the calendar month, and so on. By strictly adhering to this principle one period will be found to remain over at the end of the year, which has therefore been added on to the meteorological month of June, making it consist of seven periods.

23. The figures given in the single columns, under the heading "Mean," represent the means of twenty-four observations, or the results deduced from them, made during a day; the readings having been corrected in the manner described in the "Introduction."

24. The maxima and minima have not been obtained by observations made with self-registering instruments, but have been arrived at by immediate readings or by calculations based thereupon.

25. The direction of the wind is given with reference to the astronomical meridian, and the degrees and minutes are to be understood in the sense stated in the "Introduction." The column headed "Extremes" contains those points of the compass between which the vane oscillated on a given day; and it should be added that the vane is supposed to move "from" a certain point of the compass "to" another, through the mean direction, in the sense S. E. N. W. In cases where the vane went through 360°, "all round" will be found in the columns.

26. In calculating the means for atmospheric electricity, only the positive registrations were taken into consideration. When the quantity was too small to admit of measurement, but still distinctly appreciable, 0·5 parts of division was adopted as the value. The other two columns contain respectively the number of negative registrations and those when the tension was zero during the twenty-four hours; so, for instance, on the 20th April, 1858, positive electrical tension was recorded 23 times, the mean value of which amounted to 4·66 zero once, and negative tension not at all.

27. In the column headed "Remarks" everything worthy of particular notice is mentioned, and the duration of the phenomena is indicated by the figures enclosed in brackets.

28. The ozonic reaction is given according to Schönbein's scale, as above mentioned, and only those values were used in the monthly abstracts which were derived from observations made after twelve hours' exposure, viz., from 6 A.M. to 6 P.M. for the day, and from 6 P.M. to 6 A.M. for the night.

29. The means and sums for the month will be found recorded under the columns to which they refer, and upon the last two lines of each sheet are the means of the daily means, which represent 720 single observations; while the means of the extremes represent 30 readings, the month of June making an exception, wherein the means of the daily means represent 840, and those of the extremes 35 single readings.

30. These monthly abstracts are graphically represented in the plates of curves attached to this Report, remarks upon the nature and construction of which will be found in the paragraph "Explanation of Diagrams."

31. MONTH OF MARCH, 1858.

DAY OF MONTH.	Temperature of Air.			Pressure of Air.			Pressure of Vapor.			Relative Humidity.
	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.
1858.	°	°	°	Inches.	Inches.	Inches.	Inch.	Inch.	Inch.	(0—1.)
March 2	62·4	69·1	57·3	30·085	30·135	30·047	0·393	0·495	0·312	0·696
„ 3	67·3	86·0	52·8	30·003	30·094	29·907	0·503	0·623	0·396	0·753
„ 4	67·3	73·8	62·3	29·962	30·025	29·920	0·552	0·596	0·491	0·826
„ 5	65·5	72·7	59·9	30·018	30·052	29·990	0·498	0·570	0·475	0·792
„ 6	68·2	81·1	60·6	30·030	30·073	30·004	0·538	0·645	0·482	0·780
March 7	72·5	93·2	54·9	29·917	30·015	29·829	0·499	0·646	0·368	0·625
„ 8	69·8	87·6	60·8	29·707	29·842	29·620	0·549	0·652	0·436	0·755
„ 9	63·3	65·5	59·5	29·667	29·706	29·622	0·472	0·554	0·386	0·811
„ 10	60·8	69·8	55·1	29 821	29·907	29·710	0·337	0·430	0·290	0·632
„ 11	65·5	78·4	54·5	29·931	29·996	29·891	0·420	0·522	0·332	0·669
March 12	70·5	84·8	57·9	30·042	30·111	29·987	0·514	0·574	0·436	0·688
„ 13	76·1	90·7	63·7	30·162	30·231	30·096	0·553	0·598	0·501	0·614
„ 14	77·0	92·9	64·9	30·160	30·241	30·099	0·475	0·594	0·344	0·513
„ 15	74·7	91·8	61·0	30·073	30·163	29·990	0·414	0·468	0·334	0·482
„ 16	75·4	88·3	60·8	29·880	29·981	29·747	0·413	0·501	0·355	0·469
March 17	68·0	81·5	54·1	29·753	29·910	29·625	0·400	0·574	0·320	0·584
„ 18	57·9	65·6	49·7	29·942	29·971	29·891	0·359	0·403	0·322	0·749
„ 19	62·1	70·9	54·2	29·867	29·970	29·769	0·384	0·465	0·324	0·688
„ 20	65·4	80·3	56·2	29·813	29·915	29·723	0·381	0·511	0·274	0·608
„ 21	59·7	63·1	54·5	29·937	30·031	29·872	0·417	0·457	0·391	0·814
March 22	57·7	65·3	51·8	30·058	30·099	30·016	0·362	0·409	0·305	0·758
„ 23	59·2	73·1	47·0	30·044	30·115	29·969	0·364	0·425	0·318	0·723
„ 24	61·9	74·4	54·2	29·941	30·013	29·862	0·445	0·524	0·361	0·804
„ 25	65·8	76·3	59·9	29·744	29·841	29·670	0·507	0·567	0·442	0·799
„ 26	63·1	70·3	56·8	29·767	29·903	29·708	0·472	0·552	0·441	0·816
March 27	63·6	75·2	52·3	29·951	30·031	29·902	0·434	0·515	0·351	0·739
„ 28	61·3	69·8	52·3	30·106	30·162	30·045	0·420	0·483	0·384	0·773
„ 29	59·0	68·6	49·5	30·099	30·154	30·042	0·411	0·460	0·363	0·822
„ 30	59·7	70·7	51·8	29·990	30·031	29·941	0·417	0·459	0·374	0·814
„ 31	65·8	84·8	47·3	29·903	29·989	29·819	0·341	0·417	0·272	0·537
Means ...	65·6	77·2	55·9	29·946	30·024	29·877	0·441	0·523	0·373	0·704

MONTH OF MARCH, 1858.

Pressure of Dry Air.	Wind. Direction. Mean.	Extreme from	Extreme to	Force. Mean.	Max.	Min.	Temperature of Surface Soil. Mean.	Max.	Min.	Maximum Temperature of Black Bulb Therm.
Inches.	° ′						°	°	°	
29·692	354 11	S.W.	S.E. by E.	2·5	3·5	1·0	69·5	91·7	59·6	...
29·500	274 40	S.E. by E.	S. ½ E.	1·5	3·0	0·5	75·4	109·1	56·5	...
29·410	349 45	E.N.E.	S.E. by S.	1·7	3·5	0·5	78·1	99·9	65·7	...
29·520	6 56	S.W.	E. by N.	1·2	2·0	0·5	73·1	95·5	64·4	...
29·492	288 10	All round.		1·1	3·0	0·5	77·0	102·2	64·4	92·0
29·418	42 34	N.W. by W.	N.N.E.	0·9	2·0	0·0	80·2	125·3	59·1	111·0
29·158	350 54	E. by N.	S. ½ E.	1·7	4·0	0·5	77·0	106·4	61·1	103·6
29·195	349 43	S.W. by W.	E. by N.	2·1	3·5	0·5	66·4	70·7	62·4	...
29·484	17 12	S. by W.	E.S.E.	2·2	3·5	0·5	65·8	89·3	54·2	70·1
29·511	38 56	S.W.	E. by S.	1·4	3·5	0·5	75·2	110·5	53·1	91·0
29·528	72 28	S. by W.	N.W.	1·4	3·0	0·5	77·9	113·2	58·0	97·0
29·609	195 40	S.	W. by S.	0·9	2·0	0·0	81·3	116·8	62·4	99·1
29·685	175 1	S. ½ W.	N.W. by W.	1·1	3·5	0·0	80·8	123·1	62·4	114·4
29·659	149 58	E. by N.	N.	1·7	2·5	1·0	79·3	113·4	60·4	103·1
29·467	154 32	E	N.W.	1·6	4·5	0·5	77·6	105·1	60·1	90·9
29·353	254 55	N.E.	S.W. by S.	3·4	5·5	1·0	68·5	85·8	54·7	86·0
29·583	317 38	W. ½ S.	S.E. by E.	1·8	2·5	0·5	59·0	74·5	49·3	72·5
29·483	43 47	S. ½ W.	N. by W.	0·6	1·5	0·0	66·8	92·8	51·1	88·0
29·432	16 58	S.W.	N.W. by N.	1·4	4·5	0·5	65·7	85·6	53·6	84·0
29·520	24 19	S.W. by W.	N.E.	1·2	3·0	0·0	60·7	69·5	56·0	...
29·696	15 5	W.	E. by S.	2·0	3·5	0·0	60·8	78·5	51·6	71·6
29·680	62 6	All round.		1·3	3·0	0·0	64·9	98·1	47·2	85·8
29·496	120 25	E.S.E.	N.W.	1·2	3·0	0·5	62·4	77·9	53·1	76·3
29·237	146 15	S.E. by E.	W.	1·1	2·0	0·0	64·6	76·1	58·8	87·3
29·295	312 51	All round.		1·0	2·0	0·0	64·0	80·9	55·7	78·8
29·517	295 11	All round.		0·9	2·0	0·5	66·0	99·0	48·2	96·6
29·686	331 37	N.W. by N.	S.E.	1·2	2·0	0·5	63·8	83·3	53·3	77·6
29·688	352 50	All round.		1·2	3·0	0·0	63·3	88·7	49·1	82·9
29·573	11 47	N.E.	E.S.E.	1·2	3·0	0·0	64·9	90·8	51·4	89·8
29·562	165 15	E.N.E.	N. ½ W.	2·0	4·0	0·0	67·2	92·1	47·6	92·4
29·504	...	...	...	1·48	3·05	0·35	69·9	94·9	56·1	86·3

MONTH OF MARCH, 1858—*continued.*

DAY OF MONTH.	AMOUNT OF CLOUD. (0—10.)			GENERAL FORM OF CLOUD.	ELECTRIC TENSION.			OZONE.		HOURS OF			
					No. of Registrations.								
	Mean.	Max.	Min.		Positive Mean.	Negative.	0.	Day.	Night.	Fog.	Dew.	Hail.	Rain.
1858.													
MARCH 2 ...	3·5	9·0	0·0	Cumulus.	...	...	...	...	...	0·0	0·0	0·0	0·0
„ 3 ...	1·7	5·0	0·5	Cir. Str.	...	...	...	...	...	0·0	8·0	0·0	0·0
„ 4 ...	4·6	10·0	0·0	Cir. Cum. & Cum. Str.	...	...	...	...	...	3·0	2·5	0·0	0·0
„ 5 ...	5·0	10·0	0·0	Cum. Str. & Cir. Str.	...	...	...	4·5	6·0	0·0	3·0	0·0	0·0
„ 6 ...	4·4	10·0	0·0	Cir. Str.	...	...	...	4·0	4·0	0·0	6·5	0·0	0·0
MARCH 7 ...	0·7	4·0	0·0	Cir. Str.	...	...	...	4·0	5·0	0·0	10·0	0·0	0·0
„ 8 ..	5·3	10·0	0·0	Cir. Str.	...	...	...	4·0	5·5	0·0	3·0	0·0	0·0
„ 9 ...	10·0	10·0	10·0	Cu. Str. & Nimb.	...	...	...	7·0	7·0	0·0	0·0	0·0	3·5
„ 10 ...	8·3	10·0	1·0	Cum. Str.	...	...	...	4·0	7·0	0·0	0·0	0·0	1·5
„ 11 ...	2·7	8·0	0·0	Cir. Cum. & Cu. Str.	...	...	...	2·5	3·0	0·0	0·0	0·0	0·0
MARCH 12 ...	1·3	5·0	0·0	Cir. Cum. & Cir. Str.	...	...	...	2·0	3·0	0·0	2·75	0·0	0·0
„ 13 ...	3·3	9·0	1·0	Str. & Cir. Str.	...	...	...	1·0	0.0	0·0	0·5	0·0	0·0
„ 14 ...	4·3	9·5	1·0	Cir. Str.	...	...	...	2·0	3·0	0·0	0·5	0·0	0·0
„ 15 ...	1·5	5·0	0·0	Cum. Str. & Cir. Str.	...	...	...	1·0	2·0	0·0	0·0	0·0	0·0
„ 16 ...	6·1	10·0	0·0	Cum. Str.	...	...	...	2·0	2·0	0·0	0·0	0·0	0·0
MARCH 17 ...	8·9	10·0	5·0	Cum. Str. & Nimb.	...	...	...	6·0	2·0	0·0	0·0	0·0	4·1
„ 18 ...	7·3	10·0	3·0	Cum. Str.	...	...	...	5·0	...	0·0	0·0	0·0	0·5
„ 19 ...	2·7	10·0	0·0	Strat.	...	...	...	2·0	4·0	0·0	3·0	0·0	0·0
„ 20 ...	6·1	10·0	0·0	Cum. Str.	...	...	...	3·0	5·0	0·0	0·0	0·0	0·0
„ 21 ...	9·6	10·0	4·0	Cum. Str. & Nimb.	...	...	...	8·0	4·0	0·0	0·0	0·0	4·75
MARCH 22 ...	4·6	10·0	0·5	Cir. Cum.	...	...	...	3·0	7·5	0·0	0·0	0·0	1·75
„ 23 ...	1·0	8·0	0·0	Cum & Cirri	...	...	...	3·0	6·0	0·0	6·0	0·0	0·0
„ 24 ...	8·2	10·0	2·0	Nimbi.	...	...	...	2·0	3·0	0·0	0·0	0·0	5·6
„ 25 ...	6·8	10·0	0·5	Nimb. & Cir. Cum	...	...	...	...	2·0	0·0	0·0	0·0	8·6
„ 26 ...	6·8	10·0	1·0	Cum. Str.	...	...	...	4·0	6·0	0·0	2·5	0·0	1·0
MARCH 27 ...	4·3	10·0	0·5	Cum. Str.	...	...	...	3·0	7·0	0·0	0·25	0·0	0·25
„ 28 ...	5·2	10·0	0·0	Cum. Str.	...	...	...	4·0	6·0	0·0	5·25	0·0	0·0
„ 29 ...	3·6	10·0	0·0	Cir. Str.	...	...	...	4·0	4·0	0·0	8·75	0·0	0·0
„ 30 ...	2·2	10·0	0·0	Cum. & Cum. Str.	...	...	...	1·5	2·5	0·0	9·05	0·0	0·0
„ 31 ...	3·1	10·0	0·0	Str. & Cum. Str.	...	...	...	0·0	2·0	0·0	7·50	0·0	0·0
MEANS ...	4·77	9·08	1·0	...	...	...	..	3·32	4·17	...	...	...	...
SUMS	...	...	...	...	...	...	...	...	...	3·0	79·05	0·0	31·55

MONTH OF MARCH, 1858—*continued.*

Amount of Rain.	REMARKS.
...	Fine weather. Horizon hazy. Wind, in evening, unsteady.
...	Heavy dew (mid. to 7 a.m.) and (11 p.m.) Horizon very hazy. Veil clouds and ☾ Halo (diameter 42° 30′) (10 and 11 p.m.)
...	☾ Halo (midnight to 1 a.m.) Dew (mid. to 2 a.m.) Fog (5 a.m. to 8 a.m.)
...	Very cloudy (3 a.m. to noon). ☾ Halo (11 p.m.) Dew (9 to 11 p.m.)
...	Very cloudy (mid. to 8 a.m.) Horizon hazy during day. Veil over sky in evening. ☾ Halo (11 p.m.) Dew (mid., 1 a.m.) (8 to 11 p.m.)
...	☾ Halo (mid. to 5 a.m.) Dew (mid. to 8 a.m.) and (10 and 11 p.m.)
...	☾ Halo, 40° 0′ (2, 3 a.m.) Veil over sky (mid. to 1 p.m.) Sky overcast after noon.
...	Very cloudy all day. Horizon very misty in the evening. Misty rain (7 a.m. to 11 a.m.) (9 and 11 p.m.)
...	Misty rain (mid. and 1 a.m.) Squally and clear in morning. Cloudy in the evening.
...	Very clear all day.
...	Very clear all day. Dew (4 to 7 a.m.) Dust storm (2 p.m.) Lightning in N.W. (7 to 10 p.m.)
...	Lightning in W. and N.W. (2 to 4 a.m.) Pillar of dust very high (noon). Cloudy (1 to 5 p.m.) Fine night. Dew (2 a.m.)
...	Dew (6 a.m.) Fine clear night. Several columns of dust (1 p.m.) Heavy clouds (2 to 6 p.m.) Red sunset. Lightning in W. (10 p.m.)
...	Sky very clear all day. Clouds of dust from N.E. and N. (force of wind only) (2 to 3). Several columns of dust (2 p.m.)
...	Sky very clear (mid. to 7 a.m.) Hot wind and dust (8 a.m. to 1 p.m.) Sky overcast and gloomy in afternoon and evening.
...	Very cloudy all day. Rain (3 to 8 p.m.) (11 p.m.) Veil over sky, and clouds of dust (4 a.m. to 1 p.m.) Squally (9 p.m.)
...	Rain (midnight). Squall (12.25 a.m.) (2 p.m.) Cloudy nearly all day. Fine golden sunset. Sky totally overcast (7 to 11 p.m.)
...	Sky overcast (mid. to 4 a.m.) Clear (6 a.m. to 11 p.m.) Dew (8 to 11 p.m.) 11 p.m., sky apparently clear, but stars not bright.
...	Sky very clear (mid. to 5 a.m.) Very cloudy (9 a.m. to 11 p.m.) Bush fires in W. and N.W.
...	Very cloudy all day. Rain (10 a.m. to noon) (8 to 11 p.m.) Scud passing north (1 p.m.)
...	Heavy rain (mid. to 2 a.m.) Rather cloudy in morning, rest of day fine. Zodiacal light (4 a.m.) Golden sunset.
...	Sky very clear all day. Dew (1 to 6 a.m.) Zodiacal light (4 a.m.) No solar spots to be seen. Fine evening. (10 and 11 p.m.,) cloudy.
...	Almost clear (1 to 4 a.m.) Rain (5 and 6 a.m.) (5 to 9 p.m.) Very cloudy all day.
...	Very cloudy (mid. to noon), rest fine. Light rain (mid. to 9 a.m.), and (11 a.m.) Fine evening. Lightning in E. (8 p.m.)
...	Cloudy (mid. to 2 p.m.) (9 to 11 p.m.) Fine (2 p.m. to 8 p.m.) Dew (1 a.m. to 3 p.m.) Rain (11 p.m.)
...	Cloudy (mid. to 2 a.m.) (2 p.m. to 7 p.m.) (10 p.m.) Fine (3 a.m. to 1 p.m.) Very clear. Dew (9 p.m.)
...	Clear (mid. to 5 a.m.) (10 to 11 p.m.) Cloudy (6 a.m. to 9 p.m.) Dew (mid. to 2 a.m.) (4 to 6 a.m.) Zodiacal light (5 a.m.) ☾ Halo (8 p.m.)
...	Fine (mid. to 1 p.m.) (6 to 11 p.m.) Cloudy (2 to 5 p.m.) Heavy dew (mid. to 6 a.m.) (9 to 11 p.m.) Thin veil (8 and 9 a.m.)
...	Cloudy (4 to 6 a.m.) Rest of day fine and clear. Horizon rather hazy. Dew (mid. to 7 a.m.) (10 and 11 p.m.)
...	Sky clear until (2 p.m.) Rest cloudy. Dew (mid. to 7 a.m.) Wind squally. (2 p.m.) Dust rising.

32. MONTH OF APRIL, 1858.

DAY OF MONTH.	TEMPERATURE OF AIR.			PRESSURE OF AIR.			PRESSURE OF VAPOR.			RELATIVE HUMIDITY.
	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.
1858.	°	°	°	Inches.	Inches.	Inches.	Inch.	Inch.	Inch.	(0—1.)
April 1	71·6	85·8	60·8	29·782	29·859	29·731	0·375	0·505	0·279	0·485
„ 2	64·3	77·1	57·1	29·862	29·964	29·806	0·433	0·488	0·369	0·718
„ 3	59·3	66·4	54·1	30·007	30·040	29·967	0·341	0·414	0·284	0·675
„ 4	58·0	66·3	50·0	30·057	30·096	30·018	0·370	0·430	0·299	0·767
„ 5	57·2	62·8	52·7	30·040	30·071	29·989	0·339	0·375	0·315	0·722
April 6	56·8	65·1	51·3	29·885	29·963	29·831	0·402	0·436	0·339	0·870
„ 7	60·7	69·9	55·5	29·720	29·843	29·601	0·386	0·428	0·282	0·726
„ 8	56·6	62·0	51·9	29·861	30·020	29·702	0·359	0·389	0·334	0·781
„ 9	56·3	62·8	50·9	30·087	30·123	30·024	0·367	0·390	0·316	0·808
„ 10	59·3	71·6	45·5	30·005	30·111	29·909	0·341	0·363	3·311	0·676
April 11	64·4	78·9	56·9	29·865	29·969	29·774	0·362	0·484	0·293	0·598
„ 12	55·7	61·3	50·6	30·044	30·132	29·961	0·329	0·381	0·253	0·741
„ 13	55·9	63·2	49·5	30·172	30·225	30·127	0·299	0·337	0·267	0 669
„ 14	53·8	64·6	40·8	30·150	30·218	30·061	0·316	0·397	0·243	0·761
„ 15	62·1	77·0	47·7	30·040	30·148	29·960	0·351	0·477	0·293	0·629
April 16	68·1	65·8	51·9	30·271	30·303	30·158	0·332	0·458	0·282	0·687
„ 17	57·3	73·4	42·4	30·303	30·356	30·226	0·354	0·420	0·269	0·753
„ 18	63·8	77·7	52·7	30·240	30·288	30·191	0·382	0·433	0·340	0·645
„ 19	60·0	72·0	50·1	30·223	30·269	30·178	0·392	0·458	0·336	0·757
„ 20	55·0	66·6	42·8	30·162	30·245	30·096	0·384	0·456	0·292	0·887
April 21	61·7	78·4	50·1	30·020	30·092	29·941	0·373	0·434	0·328	0·678
„ 22	59·5	70·0	50·3	30·026	30·071	29·980	0·408	0·481	0·326	0·802
„ 23	56·3	60·8	52·3	30·026	30·072	29·971	0·367	0·414	0·340	0·808
„ 24	56·9	68·2	49·5	29·976	30·004	29·948	0·363	0·429	0·321	0·782
„ 25	54·3	69·1	41·0	30·008	30·068	29·961	0·338	0·425	0·247	0·801
April 26	53·4	66·0	42·9	30·094	30·177	30·051	0·364	0·412	0·299	0·890
„ 27	59 5	76·5	47·7	29·986	30·042	29·919	0·362	0·377	0·315	0·711
„ 28	57·8	60·8	55·3	29·887	29·927	29 857	0·406	0·441	0·353	0·848
„ 29	58·5	65·5	52·2	30·021	30·152	29·896	0·427	0·461	0·388	0·870
„ 30	55·9	62·6	49·7	30·209	30·262	30·155	0·389	0·443	0·333	0·870
Means ...	58·67	68·92	50·27	30·034	30·104	29·966	0·367	0·428	0·308	0·747

MONTH OF APRIL, 1858.

Pressure of Dry Air.	Wind.						Temperature of Surface Soil.			Maximum Temperature of Black Bulb Therm.
	Direction.			Force.						
Mean.	Mean.	Extreme from	Extreme to	Mean.	Max.	Min.	Mean.	Max.	Min.	
Inches.	° ′						°	°	°	°
29·407	219 58	All round.		2·7	5·0	0·0	71·8	95·7	59·7	90·7
29·429	295 34	N.	S. ½ W.	1·8	4·5	0·0	69·1	95·2	56·6	88·0
29·666	339 35	W.	E.S.E.	1·5	3·0	0·5	63·6	84·7	54·2	72·5
29·687	335 46	N.W.	E. by S.	1·7	3·0	0·5	63·8	84·2	49·4	73·2
29·701	321 36	W. by S.	E.S.E.	2·2	4·0	0·5	59·7	73·4	55·8	64·0
29·483	289 44	N.N.W.	S.	1·6	3·0	0·5	58·7	71·2	53·3	72·5
29·334	260 38	N. by W.	S.W. by W.	3·2	5·0	1·0	60·8	73·4	53·8	74·8
29·502	291 39	N.W. by W.	S.S.W.	4·4	6·0	2·0	58·5	67·5	52·0	63·3
29·720	336 21	W. by S.	E. by S.	2·1	4·0	0·5	58·2	69·3	52·0	65·5
29·664	162 42	E.	N.N.W.	1·4	4·0	0·5	60·8	79·8	46·9	82·0
29·503	208 6	N.N.E.	S. by E.	2·6	5·0	0·5	64·4	82·4	54·7	86·9
29·615	333 56	N.W.	E.S.E.	2·3	4·0	1·0	57·8	68·9	51·3	65·3
29·873	17 21	N.W. by N.	E. ½ N.	1·8	3·0	1·0	59·0	71·2	48·1	64·4
29·834	11 5	All round.		0·8	1·0	0·0	53·7	84·7	41·4	75·0
29·689	189 22	N.E. by E.	S.	2·9	6·0	1·0	62·4	84·4	47·1	83·5
29·939	10 26	S. by W.	S.E.	2·2	5·0	1·0	61·8	79·7	52·7	70·3
29·949	72 18	S.S.E.	N.	1·2	3·0	0·5	60·1	82·4	45·5	88·0
29·858	154 12	S.E.	N. by W.	1·0	3·0	0·0	65·3	87·4	54·0	88·0
29·831	58 20	S.	N.N.W.	1·0	2·0	0·5	63·9	87·5	51·5	84·7
29·778	340 17	All round.		1·0	3·0	0·0	59·0	80·0	44·7	81·3
29·647	147 15	E.N.E.	N.W. by N.	1·5	3·0	0·0	64·0	85·5	51·8	88·0
29·618	187 45	N.E.	S.E. by E.	2·7	5·0	1·0	63·1	80·8	51·5	81·3
29·659	44 9	All round.		1·1	3·0	0·5	58·7	69·5	53·6	66·2
29·613	227 4	S. ½ W.	N.W. by W.	1·0	2·0	0·5	61·2	80·0	51·3	83·1
29·670	109 58	E.N.E.	E.S.E.	1·4	3·0	0·5	57·4	81·8	43·5	83·6
29·730	87 9	All round.		0·7	1·0	0·0	57·5	77·8	46·5	77·0
29·624	149 25	E.	N.W.	1·8	3·0	0·5	59·8	80·1	49·2	85·8
29·481	157 40	All round.		2·1	5·0	0·5	56·5	60·2	52·3	...
29·591	343 29	N. by E.	S.E.	1·2	3·0	0·5	59·3	73·4	51·4	71·4
29·820	355 36	W. by N.	S.E.	1·0	2·0	0·5	55·4	64·2	48·5	...
29·654	—	—		1·8	3·6	0·5	60·84	78·54	50·81	77·51

MONTH OF APRIL, 1858—*continued.*

DAY OF MONTH.	AMOUNT OF CLOUD. (0—10.)			GENERAL FORM OF CLOUD.	ELECTRIC TENSION.			OZONE.		HOURS OF			
						NO. OF REGISTRATIONS.							
	Mean.	Max.	Min.		Positive Mean.	Negative.	0	Day.	Night.	Fog.	Dew.	Hail.	Rain.
1858.													
April 1 ...	6·2	10·0	0·0	Cum. Str. & Ci. Cu.	...	...	...	0·0	0·0	0·0	1·0	0·0	0·0
„ 2 ...	5·8	10·0	0·0	Cum. Str.	...	...	...	2·5	4·0	0·0	3·5	0·0	1·5
„ 3 ...	6·8	10·0	0·0	Cum. Str. & Nimb.	...	...	...	4·0	8·0	0·0	0·0	0·0	0·0
„ 4 ...	7·1	10·0	2·0	Cum. Str.	...	...	...	6·0	6·0	0·0	0·0	0·0	0·0
„ 5 ...	9·3	10·0	7·0	Cum. Str. & Nimb.	...	...	...	2·0	4·0	0·0	0·0	0·0	0.45
April 6 ...	8·4	10·0	5·0	Cum. Str. & Nimb.	...	...	...	7·0	5·0	0·0	1·0	0·0	1·5
„ 7 ...	8·9	10·0	3 0	Cum. Str. & Nimb.	...	...	...	3·0	5·0	0·0	0·0	0·0	0·5
„ 8 ...	8·6	10·0	4·0	Cum. Str.	...	...	...	8·0	7·0	0·0	0·0	0·0	0·85
„ 9 ...	9·2	10·0	6·0	Cum. Str. & Nimb.	...	...	...	3·0	7·0	0·0	0·0	0·0	1·15
„ 10 ...	5·2	10·0	0·5	Strat.	...	...	...	4·0	4·0	0·0	3·75	0·0	0·0
April 11 ...	6·9	9·5	1·0	Cum. Str.	...	...	...	1·5	2·0	0·0	0·0	0·0	0·3
„ 12 ...	6·7	10·0	1·0	Cum. Str.	...	...	...	6·0	5·0	0·0	1·0	0·0	0·0
„ 13 ...	8·5	10·0	1·0	Cum. Str.	...	...	...	4·0	4·0	0·0	0·0	0·0	0·0
„ 14 ...	0·3	4·0	0·0	Cum.	...	...	...	3·0	4·0	0·0	1·75	0·0	0·0
„ 15 ...	4·9	10·0	0·0	Cum. Str.	3·06	7	2	2·0	4·0	0·0	2·50	0·0	0·0
April 16 ...	8·7	10·0	3·0	Cum. Str.	3·53	1	4	3·0	8·0	0·0	0·0	0·0	1·0
„ 17 ...	0·5	1·0	0·0	Cir. Str.	4·77	0	5	3·0	3·0	0·0	4·5	0·0	0·0
„ 18 ...	7·2	10·0	0·5	Cir. Cum. & Cu. Str.	2·68	0	2	2·0	2·0	0·0	0·0	0·0	0·0
„ 19 ...	1·2	4·0	0·0	Cir. Cum. & Str.	3·41	0	0	3·0	2·0	0·0	3·0	0·0	0·0
„ 20 ...	1·1	10·0	0·0	Cir. Cum.	4·66	0	1	4·0	2·0	2·25	11·0	0·0	0·0
April 21 ...	3·6	10·0	0·0	Cir. Cum.	3·68	1	5	3·0	2·5	2·75	2·0	0·0	0·0
„ 22 ...	5·7	10·0	0·0	Cum. Str.	1·66	1	7	4·0	3·0	0·0	0·0	0·0	0·0
„ 23 ...	9·8	10·0	9·0	Nimb.	2·83	0	4	6·0	8·0	0·0	0·0	0·0	3·35
„ 24 ...	5·6	10·0	0·0	Cum. Str.	3·08	0	1	6·5	5·5	0·0	2·0	0·0	0·0
„ 25 ...	1·3	5·0	0·0	Cir. Cum.	4·0	0	0	4·0	0·0	0·0	10·0	0·0	0·0
April 26 ...	1·6	4·0	0·5	Cum. Str.	4·13	0	0	3·5	6·0	7·33	7·66	0·0	0·0
„ 27 ...	7·1	10·0	3·0	Cum. Str. & Ci. Cu.	2·76	0	5	1·0	1·0	0·0	3·0	0·0	0·5
„ 28 ...	9·3	10·0	4·0	Cum. Str. & Nimb.	2·39	1	2	8·0	2·0	0·0	0·0	0·0	7·3
„ 29 ...	7·3	10·0	2·0	Cum. Str.	2·09	0	1	5·0	5·0	0·0	0·0	0·0	0·25
„ 30 ...	7·7	10·0	0·5	Nimb. & Cum.	2·20	0	3	5·5	6·0	0·0	1·5	0·0	2·7
Means ...	6·02	8·9	1·8	...	3·18	...	...	3·9	4·17	...	...	...	..
Sums ...	...	...	...	...	...	11	42	...	...	12·33	59·16	0·0	21·35

MONTH OF APRIL, 1858—*continued.*

Amount of Rain.	REMARKS.
Inches.	
0·0	Hot wind. Squally, dust rising (4 to 6 a.m.). Very red sunrise. Wind decreasing (9 a.m.) Wind shifted to South (1 p.m.) Dew (9 p.m.) Rather cloudy all day.
0·0	Slight dew (1 to 4 a.m.) Fine (mid. to 4 a.m.) (noon to 5 p.m.)—the rest very cloudy. Squally and dusty (2 p.m.) Misty rain and squalls (10. to 11 p.m.)
0·023	Dull and cloudy (mid. to 1 p.m.) (9 to 11 p.m.) Fine afternoon. Lightning in North (8 p.m.)
0·0	Cloudy all day. ☾ Halo (2 a.m.) A few drops of rain at (2 p.m.)
0·0	Dull and very cloudy all day. Misty rain (8 a.m.). Only a thin veil over the sky (11 p.m.)
0·027	Thin veil and ☾ Halo (mid.) Dew (1 a.m.) Rain (10 a.m. to 1 p.m.) (4 p.m. and 7 p.m.) Densely clouded all day, with misty rain and light variable winds.
0·003	Dull and overcast all day. Heavy squalls in afternoon. Rainbow at (5 p.m.) Rain (6 to 8, and 11 p.m.)
0·008	Dull and overcast all day. Misty rain (noon, 3, 5, and 8 p.m.) Very squally and misty all day.
0·031	Dull and overcast all day. Misty rain (2, 3, 6, 8, 10, and 11 a.m.) (5 and 6 p.m.) Veil over sky (4 a.m.) Earthquake in San Francisco.
0·0	Pretty clear (3 to 9 a.m.) (7 to 11 p.m.) Dew (3 to 6 a.m.) Aurora Aust. (3 to 5 a.m.) ⊙ Halo, 48° (3 to 4 p.m.) Thin veil over sky.
0·003	Rather cloudy, Gusts of wind and clouds of dust (9 a.m. to noon). Misty rain (5 and 6 p.m.) (8 p.m.) Thin veil and lightning.
0·0	Fine (mid. to 5 a.m.) and (7 to 9 p.m.) Dew (5 a.m.) Very cloudy (6 a.m. to 6 p.m., and 10 and 11 p.m.)
0·0	Sky overcast all day until (9 p.m.)
0·0	Fine cloudless day, but dull and hazy on the horizon.
0·0	Fine (mid. to 1 p.m.), rest rather cloudy. Dusty (8 to 11 a.m.) Dew (1 to 3 a.m.)
0·009	Dull and overcast all day until (11 p.m.) Rain (mid. and 1 a.m.)
0·0	Sky clear all day. Horizon hazy. Dew (3 to 6 a.m.) and (11 p.m.) Zodiacal light (4h. 45m. a.m.)
0·0	Cloudy (mid. to 7 p.m.), rest fine. Horizon hazy in morning, but clear in afternoon.
0·0	Fine day. Horizon hazy. Dew (3 to 5 a.m.)
0·0	Cloudy (8 and 9 a.m.), the rest of day very clear. Dew (mid. to 7 a.m.) and (8 to 11 p.m.) Fog (7 to 9 a.m.)
0·0	Fine (mid. to 1 a.m.) and (8 a.m. to 11 p.m.) Fog (5 to 7 a.m.) Cloudy (2 to 7 a.m.) Horizon sometimes hazy.
0·0	Morning fine, afternoon and evening cloudy. Thunder in North (3 p.m.) Lightning in East all the evening.
0·045	Sky densely overcast all day. Horizon misty. Steady light rain (2 to 4 a.m.) and (6 to 9 a.m.)
0·0	Very cloudy (mid. to 10 a.m.), rest fine. Dew (10 to 11 p.m.) Horizon hazy all day. ☾ Halo (10 p.m.)
0·0	Fine and clear. Dew (mid. to 6 a.m.) and (8 to 11 p.m.) Zodiacal light (5 a.m.) ☾ Halo (8 and 9 p.m.)
0·0	Fine and clear. Dew (mid. to 5 a.m.) and (10 to 11 p.m.) Fog (5 to 9 a.m.) (6 to 9 p.m.) Zodiacal light (4h. 30m. a.m.) ☾ Halo (8 p.m.)
0·003	Rather cloudy all day. Dew (mid. to 2 a.m.) Rain (7 and 8 a.m.) ☾ Halo and corona (7 p.m.)
0·209	Densely overcast. Rain (1 to 2 a.m.) (5 a.m. to noon) and (6 p.m.) ☾ Halo (6 p.m.), 43° diameter. Lightning in South (7 and 8 p.m.)
0·005	Fine weather, amount of cloud very changeable. Rain (1 a.m.) ☾ Halo (4 a.m.)
0·172	Very cloudy (mid. to 6 p.m.) Fine clear evening. Rain (1 to 3, 5, and 7 a.m., and noon). Dew (10 and 11 p.m.) Very red sunset.
..	
0·541	

33. MONTH OF MAY, 1858.

DAY OF MONTH.	TEMPERATURE OF AIR.			PRESSURE OF AIR.			PRESSURE OF VAPOR.			RELATIVE HUMIDITY.
	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.
1858.	°	°	°	Inches.	Inches.	Inches.	Inch.	Inch.	Inch.	(0—1.)
MAY 1	54·5	60·9	46·3	30·278	30·309	30·260	0·370	0·435	0·321	0·871
„ 2	56·2	67·8	45·9	30·232	30·292	30·155	0·383	0·466	0·297	0·845
„ 3	56·5	69·8	45·3	30·174	30·222	30·127	0·352	0·395	0·280	0·770
„ 4	61·8	69·1	55·7	30·125	30·163	30·077	0·386	0·413	0·336	0·699
„ 5	63·3	73·6	54·9	30·057	30·124	29·990	0·423	0·454	0·395	0·727
MAY 6	62·7	76·2	52·6	29·789	29·978	29·617	0·415	0·463	0·348	0·728
„ 7	57·6	64·0	52·2	29·862	29·911	29·786	0·383	0·432	0·354	0·806
„ 8	57·3	64·2	52·6	29·984	30·038	29·911	0·411	0·480	0·365	0·874
„ 9	54·9	63·5	47·4	30·011	30·046	29·975	0·381	0·426	0·315	0·884
„ 10	54·8	64·9	47·9	29·942	29·991	29·886	0·361	0·420	0·292	0·840
MAY 11	54·5	67·0	44·2	29·789	29·878	29·685	0·314	0·403	0·274	0·739
„ 12	58·0	64·4	52·6	29·511	29·661	29·416	0·357	0·400	0·308	0·741
„ 13	55·8	60·3	53·3	29·486	29·589	29·417	0·384	0·416	0·367	0·861
„ 14	54·7	60·4	52·0	29·673	29·795	29·596	0·407	0·458	0·356	0·951
„ 15	52·5	60·6	47·3	29·788	29·843	29·737	0·347	0·385	0·332	0·876
MAY 16	56·1	66·9	47·7	29·734	29·793	29·664	0·359	0·398	0·319	0·796
„ 17	58·1	65·3	48·6	29·638	29·708	29·595	0·317	0·339	0·278	0·656
„ 18	50·2	61·8	41·3	29·720	29·766	29·666	0·298	0·369	0·260	0·819
„ 19	50·6	57·2	45·3	29·873	30·009	29·777	0·314	0·411	0·242	0·851
„ 20	51·0	56·0	45·9	30·144	30·258	30·009	0·296	0·326	0·264	0·791
MAY 21	50·4	56·4	47·0	30·286	30·321	30·255	0·338	0·373	0·296	0·924
„ 22	49·6	57·5	40·8	30·262	30·309	30·224	0·298	0·331	0·246	0·837
„ 23	51·9	58·9	46·8	30·217	30·250	30·187	0·348	0·401	0·297	0·901
„ 24	48·5	56·4	42·1	30·161	30·198	30·120	0·330	0·359	0·283	0·965
„ 25	45·4	55·3	39·3	30·104	30·153	30·037	0·306	0·354	0·267	1·007
MAY 26	46·0	54·1	40·4	29·982	30·036	29·937	0·319	0·359	0·259	1·026
„ 27	49·8	60·4	38·8	29·899	29·951	29·826	0·341	0·415	0·254	0·952
„ 28	55·8	63·1	51·7	29·780	29·812	29·737	0·415	0·456	0·376	0·931
„ 29	54·9	60·9	51·1	29·700	29·788	29·630	0·401	0·448	0·348	0·930
„ 30	51·4	56·2	48·2	29·726	29·798	29·602	0·323	0·371	0·297	0·852
MEANS ...	54·16	62·44	47·50	29·931	30·000	29·863	0·356	0·405	0·307	0·848

MONTH OF MAY, 1858.

Pressure of Dry Air.	Wind. Direction. Mean.	Direction. Extreme from	Direction. Extreme to	Force. Mean.	Force. Max.	Force. Min.	Temperature of Surface Soil. Mean.	Temperature of Surface Soil. Max.	Temperature of Surface Soil. Min.	Maximum Temperature of Black Bulb Therm.
Inches.	° ′						°	°	°	°
29·908	297 23	N.W. by N.	S.E.	1·06	2·0	0·5	54·2	61·7	46·5	61·5
29·849	190 48	S.	N.W.	1·19	2·0	0·5	59·4	78·7	46·3	86·7
29·822	133 46	E.	N. ½ W.	1·6	3·0	0·5	57·1	76·3	46·3	83·5
29·739	149 4	N.E. by E.	N. by E.	2·83	6·0	1·0	61·1	74·5	53·6	75·0
29·634	161 49	N.E. by E.	N.	2·61	6·0	1·0	63·0	80·0	52·5	79·4
29·374	168 13	N.E.	W.	3·63	9·0	1·0	59·3	75·0	50·9	83·8
29·479	179 58	N.E.	N.W. by N.	3·46	4·0	2·0	55·3	64·8	49·4	72·3
29·573	208 5	N. by E.	S.E. by E.	1·13	2·0	0·0	56·2	66·8	50·0	70·3
29·630	193 45	S. by W.	W.N.W.	0·85	2·0	0·0	56·2	69·9	45·4	81·0
29·581	120 0	All round.		1·17	3·0	0·5	56·3	72·3	47·4	84·5
29·475	153 41	E.	N.	2·56	4·0	0·5	53·9	67·0	44·5	73·9
29·154	166 3	N.E. by E.	N.	3·52	8·0	0·5	56·6	66·8	49·8	68·4
29·102	198 17	N.	W.	3·54	6·0	2·0	53·3	57·5	51·6	...
29·266	327 42	N.N.W.	S.E. by S.	2·46	4·0	1·0	54·2	62·4	50·9	...
29·441	60 23	S.E. by S.	N.E.	1·19	3·0	0·5	52·0	65·5	45·2	74·3
29·375	150 58	E. by N.	N.N.W.	1·46	3·0	1·0	54·3	67·7	46·7	76·3
29·321	164 16	N.E.	N. by W.	2·58	4·0	1·0	55·6	68·4	47·0	75·0
29·422	133 10	All round.		1·31	3·0	0·5	51·4	76·1	40·3	88·3
29·559	314 32	N.E.	S. by W.	3·21	5·0	0·0	48·9	56·4	44·5	...
29·848	359 23	S.W.	S.E.	2·63	5·0	1·0	49·2	59·5	45·2	67·3
29·948	223 8	S.E.	W.S.W.	1·0	1·0	1·0	51·0	59·1	45·2	...
29·964	201 49	N.E. by N.	S.W.	1·19	2·0	0·5	50·1	60·2	41·2	73·0
29·869	322 43	N.W. by N.	S.E.	1·02	2·0	0·0	51·3	61·1	45·2	...
29·831	124 11	All round.		1·1	3·0	0·5	49·3	60·4	41·7	63·3
29·798	149 55	E.N.E.	S.	1·04	2·0	0·5	47·5	65·7	38·6	68·9
29·663	193 25	E.N.E.	S.W. by W.	0·98	2·0	0·5	46·9	58·7	38·4	...
29·558	49 3	N.E.	E.S.E.	1·71	4·0	1·0	49·5	62·4	40·3	...
29·265	25 52	S. by W.	S.E. by E.	1·23	2·0	0·5	54·0	59·3	50·5	...
29·299	197 43	N.N.E.	W.N.W.	1·56	3·0	0·5	54·2	62·6	49·4	68·4
29·403	242 12	N.N.W	S.S.W	3·08	5·0	1·0	49·1	54·2	45·2	...
29·575	...	...	...	1·93	3·7	0·7	53·66	65·7	46·32	75·00

MONTH OF MAY, 1858—*continued.*

Day of Month.	Amount of Cloud. (0—10.)			General Form of Cloud.	Electric Tension.			Ozone.		Hours of			
						No. of Registrations.							
	Mean.	Max.	Min.		Positive Mean.	Negative.	0.	Day.	Night.	Fog.	Dew.	Hail.	Rain.
1858.													
May 1 ...	9·21	10·0	1·0	Cum.	2·91	0	1	4·0	5·0	0·0	2·0	0·0	0·0
„ 2 ...	1·71	10·0	0·0	Cum. & Ci. Str.	...	...	...	2·0	3·0	0·0	8·0	0·0	0·0
„ 3 ...	5·23	10·0	0·0	Ci. Str. & Cu. Str.	1·43	0	0	2·0	2·0	0·0	6·0	0·0	0·3
„ 4 ...	6·0	10·0	1·0	Cum. Str.	0·64	1	6	1·0	2·0	0·0	0·0	0·0	0·2
„ 5 ...	2·26	7·0	1·0	Cir. Str.	3·09	3	3	4·0	...	0·0	0·75	0·0	0·0
May 6 ...	3·62	10·0	0·0	Cir. Str.	2·63	9	0	...	2·0	0·0	0·0	0·0	3·15
„ 7 ...	3·38	9·0	0·0	Cum. Str.	2·05	0	0	6·0	2·0	0·0	0·0	0·0	0·0
„ 8 ...	6·87	10·0	1·0	Cum. Str.	0·98	0	3	6·0	4·0	0·0	1·25	0·0	2·0
„ 9 ...	6·23	10·0	0·5	Cum. Str.	4·02	0	1	8·0	5·0	1·8	7·0	0·0	0·0
„ 10 ...	6·52	10·0	0·0	Cum. Str.	4·74	0	1	...	3·0	0·0	3·0	0·0	0·0
May 11 ...	5·46	10·0	0·0	Cum. Str.	2·48	0	1	2·0	6·0	0·0	0·0	0·0	0·25
„ 12 ...	8·17	10·0	0·0	Cum. Str. & Nimb.	2·03	5	1	2·0	3·0	0·0	0·0	0·0	2·0
„ 13 ...	9·17	10·0	6·0	Cum. Str. & Nimb.	1·71	1	8	5·0	4·0	0·0	0·0	0·0	4·6
„ 14 ...	8·02	10·0	3·0	Cum. Str. & Nimb.	0·63	0	7	8·0	5·0	0·0	0·0	0·0	4·55
„ 15 ...	2·94	8·0	0·0	Cum. Str.	2·55	0	6	5·0	5·0	0·0	9·5	0·0	0·0
May 16 ...	7·79	10·0	2·0	Cum. Str.	2·94	0	0	2·0	3·0	0·0	2·5	0·0	0·25
„ 17 ...	2·73	9·0	0·0	Cir. Str. & Cu. Str.	2·51	0	2	4·0	2·0	0·0	0·0	0·0	0·0
„ 18 ...	0·65	3·0	0·0	Cir. Str. & Cum.	5·19	0	0	0·0	4·0	0·5	7·0	0·0	0·0
„ 19 ...	7·96	10·0	2·0	Cum. Str. & Nimb.	3·16	0	0	...	1·0	0·0	0·0	0·0	3·95
„ 20 ...	8·19	10·0	3·0	Cir. Cum. & Nimb.	3·95	1	0	...	6·0	0·0	0·0	0·0	1·4
May 21 ...	9·08	10·0	7·0	Cu. Str. & Nimb.	3·80	0	0	5·0	8·0	1·0	0·5	0·0	3·7
„ 22 ...	7·92	10·0	1·0	Cir. Cum.	3·43	0	0	4·0	...	0·0	3·0	0·0	0·0
„ 23 ...	7·63	10·0	2·0	Cir. Cu. & Cu. Str.	2·65	0	3	8·0	5·0	0·0	0·0	0·0	0·55
„ 24 ...	6·71	10·0	1·0	Cir. Str.	2·95	0	7	3·0	6·0	0·0	7·5	0·0	2·3
„ 25 ...	4·0	10·0	1·0	Cir. Str. & Cu. Str.	5·14	0	0	...	...	6·7	10·3	0·0	0·0
May 26 ...	5·67	10·0	0·0	Cum. Str.	4·01	0	1	3·0	0·0	6·5	10·25	0·0	0·0
„ 27 ...	8·97	10·0	2·0	Cu. Str. & Nimb.	1·95	0	6	4·0	...	7·8	3·0	0·0	6·8
„ 28 ...	8·17	10·0	3·0	Cir. Cu. & Nimb.	1·37	0	11	1·0	4·0	0·0	3·0	0·0	6·8
„ 29 ...	8·25	10·0	3·0	Cu. Str. & Nimb.	2·01	0	4	5·0	...	1·95	1·25	0·0	3·8
„ 30 ...	5·24	9·5	1·0	Cir. Cu. & Cu. Str.	1·49	0	3	5·0	...	0·0	0·0	0·0	1·05
Means ...	6·12	9·5	1·38	...	2·70	...	...	3·96	3·75	...	...	...	...
Sums	...	...	...	...	...	20	75	...	...	26·25	85·8	0·0	47·65

MONTH OF MAY, 1858—*continued.*

Amount of Rain.	REMARKS.
Inches.	
0	Clear (mid. to 1 a.m.) Overcast (2 a.m. to 11 p.m.) Dew (mid. and 1 a.m.)
0	Fine day. Dew (2 to 6 a.m.), (9 to 11 p.m.) Horizon hazy. Fine sunset.
0	Fine morning. Afternoon and evening cloudy. Heavy dew (mid. to 5 a.m.) Rain (11 p.m.)
0	Cloudy (mid. to 8 a.m.), rain (2 and 3 a.m.), rest of day fine. Dusty (9 to 11 a.m.) Cir. strat. veil and ☾ Halo (10 p.m.)
0	Fine and clear. Dew (mid. and 1 a.m.) ☾ Corona (1, 3, 4, 5, 6, a.m.) ☾ Halo, green (11 p.m.) Very dusty at noon.
0·437	Clear (mid. to 8 a.m. and 7 to 11 p.m.) Clouds of dust (8 a.m. to 2 p.m.) Rain with thunder and lightning (3 to 6 p.m.)
0	Fine weather. Squally at 6 a.m. Horizon hazy. Veil over sky in evening.
0·008	Fine (mid. to 5 a.m.), rest cloudy. ☾ Halo (3 a.m.) Rain (10 to noon). Dew (10 to 11 p.m.)
0·005	Clear (mid. to 4 a.m.), (10 a.m. to 3 p.m.), rest cloudy. Dew (mid. to 6 a.m.) Fog (7 and 8 a.m.) ⊙ Halo 42° 46′ (3h. 12m).
0	Fine. Dew (mid. to 6 a.m.) Horizon hazy.
0	Clear (mid. to noon) rest cloudy. Veil over sky and ⊙ Halo (1 p.m.) Rain (11 p.m.)
0·019	Cloudy all day, except (8, 9, and 10 p.m.) Rain (3 to 7 p.m.) Very dusty at noon.
0·157	Overcast. Rain (mid. 1, 4 to 11 a.m. and 2 to 5 p.m.) Very squally.
0 054	Fine. Dew (mid. to 5 a.m. and 8 to 11 p.m.) Horizon hazy.
0	Cloudy (3 and 5 p.m.), rest clear. Dew (mid. to 5 a.m. and 8 to 11 p.m.)
0	Cloudy nearly all day. Dew (5 and 6 a.m.) Rain (7 p.m.) Lightning the whole evening in W.S.W. N.W.
0·006	Fine. Zodiacal light (4 to 5 a.m.) Lightning all evening in S.E. and E.
0	Very fine and clear. Zodiacal light (5 a.m.) Dew (mid to 5 a.m., 10 to 11 p.m.) Fog (7 p.m.)
0·138	Sky generally overcast. Rain (3, 7 a.m. to 1 p.m. and 3 to 7 p.m.) Rainbow (2 p.m.) Squally in evening.
0·038	Sky generally overcast. Rain (mid. to 8 a.m.) Squally in morning. ☾ Halo (6 p.m.)
0·013	Very cloudy. Rain (2 a.m., 6 to 8 and 11 a.m.) Fog (8 p.m.) Dew (10 p.m.)
0	Very cloudy. Dew (3 to 5 a.m.) Violet tint towards N.W. (5 p.m.) ☾ Corona (6 p.m.)
0·002	Generally cloudy. Rain (noon and 7 to 8 p.m.) ☾ Halo (1 a.m. and 6 p.m.)
0·010	Clear (mid. to 2 a.m. and 3 to 9 p.m.), rest very cloudy. Dew (mid. and 5 to 11 p.m.) Rain (2 to 8 a.m.) ☾ Corona (5 and 6 p.m.) ☾ Halo (9 to 10 p.m.)
0	Cloudy (5 to 10 a.m.), rest fine. Dew (mid. to 5 a.m. and 5 to 11 p.m.) Fog (4 to 10 a.m., 7 and 11 p.m.) Zodiacal light (4h. 30m.). ☾ Halo (mid. 1, 4, and 6 a.m.)
0	Very cloudy (4 a.m. to 2 p.m.) ☾ Corona (3 a.m.) Dew (mid. to 4 a.m. and 5 to 11 p.m.) Fog (4 to 10 a.m., 11 p.m.)
0·011	Fine (mid. and 1 a.m.), rest very cloudy. Dew (mid. to 2 a.m.) Fog (3 to 10 a.m.) Rain (4 to 11 p.m.) ☾ Halo (2, 3, and 4 a.m.)
0·233	Cloudy. Rain (mid. to 6 and 8 a.m.) Dew (7 to 9 p.m.)
0	Cloudy. Rain (3 to 6 a.m., 6 and 7, 9 and 10 p.m.) Fog (5 to 7 a.m.) Dew (mid. and 1 a.m.)
0·118	Fine. Rain (1 and 2, 5 and 6 p.m.) ☾ Corona (2 a.m.) Halo (9 p.m.) Squally at noon.
...	
1·249	

34. MONTH OF JUNE, 1858.

DAY OF MONTH.	Temperature of Air.			Pressure of Air.			Pressure of Vapor.			Relative Humidity.
	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.
1858.	°	°	°	Inches.	Inches.	Inches.	Inch.	Inch.	Inch.	(0—1.)
May 31	51·6	58·0	46·6	29·726	29·799	29·602	0·323	0·371	0·297	0·846
June 1	51·7	61·8	48·2	29·645	29·793	29·548	0·337	0·359	0·310	0·857
„ 2	50·5	57·3	44·2	29·910	30·020	29·798	0·332	0·386	0·297	0·905
„ 3	47·1	57·5	39·7	30·049	30·098	30·015	0·295	0·363	0·243	0·911
„ 4	45·4	55·5	38·6	30·128	30·169	30·103	0·293	0·369	0·245	0·964
June 5	44·0	57·7	34·1	30·112	30·163	30·055	0·259	0·309	0·211	0·899
„ 6	47·3	58·1	35·5	30·007	30·074	29·910	0·239	0·286	0·200	0·731
„ 7	52·2	55·3	47·9	29·938	29·987	29·868	0·273	0·342	0·214	0·698
„ 8	50·4	55·7	45·3	29·928	30·014	29·813	0·287	0·339	0·259	0·784
„ 9	48·1	52·9	42·6	29·897	30·045	29·767	0·292	0·342	0·248	0·869
June 10	49·9	58·4	42·6	30·052	30·110	30·025	0·331	0·395	0·268	0·724
„ 11	52·3	57·1	48·6	30·169	30·220	30·115	0·374	0·417	0·328	0·954
„ 12	52·5	56·9	49·7	30·262	30·309	30·220	0·387	0·412	0·358	0·977
„ 13	50·2	58·0	41·5	30·318	30·347	30·285	0·356	0·391	0·296	0·978
„ 14	46·8	60·0	38·4	30·348	30·400	30·312	0·293	0·363	0·250	0·913
June 15	45·9	60·0	36·1	30·253	30·327	30·177	0·279	0·355	0·231	0·903
„ 16	45·0	57·1	35·7	30·087	30·167	30·016	0·256	0·292	0·221	0·856
„ 17	46·4	59·3	35·9	29·947	30·010	29·880	0·253	0·301	0·228	0·860
„ 18	48·7	61·3	40·9	29·907	29·950	29·866	0·263	0·288	0·239	0·766
„ 19	48·9	57·4	42·8	29·738	29·870	29·624	0·275	0·326	0·243	0·795
June 20	49·7	57·1	46·2	29·623	29·687	29·584	0·326	0·374	0·295	0·913
„ 21	50·1	58·4	45·9	29·747	29·843	29·685	0·315	0·338	0·285	0·870
„ 22	48·0	56·6	40·9	29·984	30·154	29·855	0·325	0·408	0·250	0·970
„ 23	48·4	58·0	40·8	30·250	30·293	30·163	0·328	0·390	0·268	0·965
„ 24	45·9	55·5	35·9	30·220	30·285	30·165	0·274	0·312	0·221	0·887
June 25	50·0	55·1	46·2	30·162	30·199	30·134	0·292	0·310	0·279	0·809
„ 26	50·1	56·4	44·8	30·181	30·230	30·125	0·306	0·324	0·286	0·845
„ 27	50·0	52·6	47·3	30·029	30·114	29·968	0·337	0·370	0·305	0·934
„ 28	50·2	58·2	45·0	30·041	30·101	30·009	0·343	0·412	0·316	0·943
„ 29	48·8	53·7	43·0	30·090	30·167	30·041	0·325	0·367	0·261	0·942
June 30	46·3	56·0	39·0	30·225	30·273	30·172	0·293	0·345	0·256	0·930
July 1	39·7	45·7	36·4	30·252	30·303	30·210	0·258	0·298	0·229	1·057
„ 2	40·8	53·1	32·6	30·160	30·212	30·100	0·232	0·307	0·200	0·910
„ 3	42·1	56·0	33·1	30·054	30·125	29·982	0·217	0·287	0·166	0·810
„ 4	41·6	45·3	37·9	29·984	30·009	29·966	0·265	0·297	0·232	1·008
Means ...	47·9	56·4	41·4	30·041	30·110	29·976	0·298	0·347	0·258	0·885

MONTH OF JUNE, 1858.

Pressure of Dry Air.	Wind. Direction. Mean.	Extreme from	Extreme to	Force. Mean.	Max.	Min.	Temperature of Surface Soil. Mean.	Max.	Min.	Maximum Temperature of Black Bulb Therm.
Inches.	° ′						°	°	°	°
29·403	157 49	E.N.E.	N.N.W.	2·78	5·0	1·0	49·3	58·0	44·1	...
29·308	174 45	N.E.	S.	1·5	3·0	1·0	50·2	60·6	45·0	...
29·578	270 31	N.E.	S.	2·13	4·0	1·0	49·0	55·8	43·0	...
29·754	143 16	E.	N. by W.	1·13	2·0	0·5	46·9	60·2	40·3	73·4
29·835	136 24	All round.		1·25	3·0	0·5	44·8	58·7	37·0	73·0
29·853	129 23	E. ½ N.	N.E.	1·96	3·0	1·0	43·4	59·3	35·1	71·2
29·768	149 51	E.N.E.	N.	3·74	8·0	1·0	44·9	61·5	34·0	64·9
29·665	179 20	N.N.E.	N. by W.	5·54	8·0	3·0	48·3	51·1	44·8	...
29·641	183 4	N.	N.N.W.	4·21	6·0	3·0	48·2	55·8	42·5	66·5
29·605	276 7	N. by W.	S.W.	3·21	5·0	1·0	47·1	53·8	40·6	...
29·721	249 32	N.W. by W.	S.W.	2·46	4·0	1·0	48·7	59·7	40·3	64·2
29·795	290 36	W. by N.	S.W. by S.	1·54	3·0	1·0	52·0	59·1	47·4	...
29·875	319 7	W.S.W.	S.E.	1·63	3·0	0·0	52·6	60·2	48·9	68·5
29·962	121 7	S.E.	N.E. by N.	0·77	1·0	0·0	51·0	64·4	43·0	73·9
30·055	132 51	E. by N.	N.	1·21	2·0	0·5	46·6	60·4	38·8	74·5
29·974	156 52	E. by N.	N.	1·25	3·0	1·0	44·9	60·2	35·9	74·5
29·831	159 48	N.E.	N. by W.	1·77	3·5	1·0	43·9	58·0	35·9	67·6
29·694	161 59	N.E.	W.N.W.	2·38	4·0	1·0	44·5	62·6	34·2	70·0
29·644	154 26	N.E.	N. ½ W.	2·73	5·0	0·5	46·2	60·2	38·6	68·2
29·463	154 12	E. to N.	N.	2·29	5·0	1·0	45·9	53·6	38·6	59·0
29·297	164 21	N.E.	N.	1·38	2·0	1·0	48·0	56·0	43·9	61·0
29·432	179 22	N.E.	N.W.	1·67	2·0	1·0	50·2	64·6	44·5	69·4
29·659	269 39	N.E.	S.	1·29	3·0	0·5	47·1	60·4	39·9	...
29·922	176 31	All round.		1·02	2·0	0·5	47·9	60·4	40·3	...
29·946	166 13	N.E.	N.	2·67	5·0	1·0	45·5	60·6	35·9	64·6
29·870	175 56	N.E.	N.N.W.	2·79	4·0	1·0	47·7	56·2	43·0	57·2
29·875	164 35	E.N.E.	N. by W.	2·0	4·0	1·0	48·9	58·4	42·5	58·3
29·692	176 23	N.E.	N.W.	2·58	5·0	1·0	48·2	51·4	45·9	...
29·698	169 21	N.E.	S.E.	1·08	2·0	0·5	50·2	65·0	43·2	74·3
29·765	343 19	N.N.W.	E. by S.	1·7	4·0	0·5	48·3	55·8	40·8	...
29·932	52 9	S.S.E.	N.N.W.	2·31	4·0	0·5	46·0	61·3	37·7	62·8
29·994	160 6	All round.		1·08	2·0	0·5	42·9	54·0	35·5	...
29·928	132 5	S.	N.N.E.	1·13	2·0	0·5	42·0	60·0	33·7	68·2
29·837	181 40	N.E.	W.S.W.	1·96	4·0	1·0	42·3	65·5	34·7	64·2
29·719	272 23	E.	S.W. by W.	2·21	4·0	1·0	41·0	48·3	35·5	...
29·742	...	...	...	2·07	3·70	0·90	46·99	58·6	40·14	...

MONTH OF JUNE, 1858—*continued.*

DAY OF MONTH.	Amount of Cloud. (0—10.)			General Form of Cloud.	ELECTRIC TENSION.			Ozone.		Hours of			
					Positive Mean.	No. of Registrations.							
	Mean.	Max.	Min.			Negative.	0.	Day.	Night.	Fog.	Dew.	Hail.	Rain.
1858.													
May 31 ...	6·63	10·0	1·0	Cir. Str., Cum. Str.	1·73	0	1	3·0	5·0	0·0	0·0	0·0	0·0
June 1 ...	8·0	10·0	2·0	Cir. Cum. & Cum. Str.	2·32	0	0	4·0	4·0	0·0	0·0	0·0	0·5
„ 2 ...	4·93	10·0	0·0	Cir. Cum. & Cum. Str.	2·81	0	0	3·0	6·0	0·0	5·0	0·0	1·2
„ 3 ...	4·62	9·0	1·0	Cir. Cum. & Cum. Str.	5·32	0	2	1·0	5·0	0·0	7·5	0·0	0·0
„ 4 ...	1·96	6·0	0·0	Cir. Str. & Cum. Str.	3·89	0	0	2·0	2·0	0·0	10 5	0·0	0·0
June 5 ...	0·04	0·5	0·0	○	4·75	0	0	1·0	3·0	0·0	11·0	0·0	0·0
„ 6 ...	2·37	10·0	0·0	Cir. Str. & Cu. & Cu. St.	2·39	3	5	2·0	3·0	0·0	8·0	0·0	0 0
„ 7 ...	7·96	10·0	1·0	Cir. Str., Cu. Str., Nimb.	1·31	1	4	0·0	0·0	0·0	0·0	0·0	1·25
„ 8 ...	5·27	10·0	0·5	Cir. St., Cu. St., Nimb.	1·69	0	0	1·0	3·0	0·0	0·0	0·0	1·0
„ 9 ...	6·25	10·0	0·0	Cir. Cu., Cu. St., Nimb.	2·10	0	2	6·0	4·0	0·0	0·0	0·0	1·3
June 10 ...	5·65	10·0	1·0	Cir. Str., Cum. Str.	2·30	0	0	4·0	5·0	0·0	1·25	0·0	0·0
„ 11 ...	8·75	10·0	3·0	Cum. Str., Nimb.	2·05	0	1	4·0	...	0·0	0·0	0·0	4·65
„ 12 ...	7·90	10·0	4·0	Nimb., Cum. Str.	1·26	0	8	8·0	...	0·0	0·0	0·0	7·2
„ 13 ...	4·11	10·0	0·0	Nimb. Cu. St. & Cir. Cu.	3·10	0	1	1·0	6·0	9·5	2·0	0·0	1·5
„ 14 ...	1·02	4·0	0·0	Cir. Str.	4·11	0	1	0·0	...	8·3	6·0	0·0	0·0
June 15 ...	0·67	5·0	0·0	Cum. Str., Cir. Str.	3·73	0	0	...	1·0	0·5	10·5	0·0	0·0
„ 16 ...	1·33	5·0	0·0	Cir. Cum., Cum. Str.	3·06	2	0	2·0	2·0	0·0	7·0	0·0	0·0
„ 17 ...	1·62	5·0	0·0	Str., Cir. Str.	3·39	0	1	0·0	4·0	0·0	6·0	0·0	0·0
„ 18 ...	5·09	10·0	1·0	Cir. Str., Cum. Str.	3·17	3	1	2·0	3·0	0·0	0·0	0·0	0·0
„ 19 ...	7·62	10·0	4·0	Cum. Str. & Cir.	2·52	0	3	0·0	2·0	0·0	0·0	0·0	1·0
June 20 ...	6·94	10·0	1·0	Cu. St., Cir. St. & Nimb.	2·05	2	0	6·0	5·0	0·0	2·5	0·0	4·5
„ 21 ...	6·08	10·0	1·0	Cum. Str., Nimb.	2·69	2	0	2·0	7·0	0·0	0·0	0·0	2·1
„ 22 ...	6·52	10·0	1·0	Cu. St. Nimb., Cir. St.	3·70	0	0	3·0	3·0	0·0	5·8	0·0	1·65
„ 23 ...	5·41	10·0	0·0	Cir. Cum. & Cum. Str.	5·54	0	0	2·0	0·0	0·0	5·0	0·0	0·45
„ 24 ...	3·83	10·0	0·5	Cir. Str.	3·88	0	0	5·0	2·0	0·0	3·0	0·0	0·0
June 25 ...	9·91	10·0	6·0	Cum. Str., Cir. Str.	2·28	0	1	1·0	4·0	0·0	0·0	0·0	0·0
„ 26 ...	9·25	10·0	7·0	Cir. St., Cir. Cu., Cu. St.	2·53	0	5	3·0	2·0	0 0	0·0	0·0	0·1
„ 27 ...	9·06	10·0	3·0	Nimb., Cum. Str.	1 59	0	8	...	4·0	0·0	0·5	0·0	8·7
„ 28 ...	6·33	10·0	2·0	Cir. Str., Cum. Str.	3·03	0	1	0·0	3·0	0·0	1·5	0·0	0·0
„ 29 ...	5·88	10·0	1·0	Cu. St., Cir. St., Nimb.	3·76	0	0	3·0	2·0	4·5	7·5	0·0	0·0
June 30 ...	5·42	6·0	0·0	Cir. Str., Cum. Str.	4·16	0	0	3·0	8·0	2·0	11·0	0·0	0·0
July 1 ...	8·04	10·0	0·0	Fog	7·55	0	0	3·0	5·0	21·4	1·0	0·0	0·0
„ 2 ...	4·71	10·0	0·5	Cir. Str., Cum. Str.	6·00	0	1	...	...	10·5	4·0	0·0	0·0
„ 3 ...	3·17	10·0	0·0	Cum. Str.	4·16	0	0	2·0	4·0	0·0	2·0	0·0	0·8
„ 4 ...	6·94	10·0	3·0	Nimb., Cu. St., Cir. Cu.	4·59	2	0	7·0	8·0	0·0	0·0	0·0	6·63
Means ...	5·41	8·87	1·27	...	3·27	...	...	2·62	3·71	...	...	...	...
Sums ...	...	...	...	...	...	15	46	...	...	56·7	118·55	0·0	44·55

MONTH OF JUNE, 1858—*continued.*

Amount of Rain.	REMARKS.
Inches.	
0·000	Fine (11 a.m. to 1 p.m. and 9 to 11 p.m.), rest cloudy. ☾ Halo (mid. and 2 to 4 a.m.)
0·000	Fine (6 to 8 p.m.), rest cloudy. ☾ Halo (2 a.m.) Rain (11 a.m. and 6 p.m.)
0·016	Amount of cloud, very changeable. Rain (mid. to 2 a.m. and 3 p.m. Dew (7 to 11 p.m.) ☾ Corona (1, 3, and 4 a.m.).
0·000	Fine. Horizon hazy. Dew (mid. to 5 a.m. and 6 and 7 a.m.) Zodiacal light (8 p.m.)
0·000	Fine. Dew (mid. to 5 a.m., 6 to 11 p.m.) ☾ Halo (5 a.m.) Zodiacal light (7 p.m.)
0·000	Very clear. Dew (mid. to 7 a.m., 9 to 11 p.m.) Horizon very clear towards S.E.
0·000	Very clear all day, except (9, 10 and 11 p.m.) Dew (mid. to 7 a.m.). Clouds of dust at (11 a.m.) Squally (11 p.m.)
0·007	Clear (7 to 10 p.m.) Clouds of dust (11 a.m.) Lightning in South (9 p.m.)
0·000	Fine before noon, very cloudy after. Rain (6, 7, and 11 p.m.) Rather squally in afternoon.
0·035	Cloudy (mid. to 2 p.m.) Fine afternoon. Rain (1, 5 to 8, 10 a.m., and 1 p.m.) Rainbow (10 a.m.)
0·000	Rather cloudy. Dew (5 and 6 a.m.)
0·000	Very cloudy all day. Misty rain (6, 10 to 12, and 5 to 11 p.m.)
0·059	Very cloudy all day. Misty rain (mid. to 4, 6, 8, 10 and 11 a.m., and 6 p.m.) Veil over sky (10 and 11 p.m.)
0·009	Cloudy before noon, very clear after. Rain (1 and 2 a.m.) Fog (3 to 8 a.m. and 8 to 11 p.m.) Dew (6 to 8 p.m.)
0·000	Very clear. Fog (mid. to 8 a.m.) Dew (6 to 11 p.m.)
0·000	Very clear. Dew (mid. to 7 a.m. and 9 to 11 p.m.)
0·000	Very clear. Dew (mid. to 3 a.m. and 9 to 11 p.m.)
0·000	Very clear. Dew (mid. to 4 a.m. and 7 a.m.) ⊙ Halo (10 a.m.) ☾ Corona (7 and 9 p.m.), Halo (10 p.m)
0·000	Fine, but rather cloudy. ⊙ Halo (2 to 4 p.m.) ☾ Halo and Corona (6 p.m.)
0·000	Cloudy. Misty rain (6 p.m.) Squally and dull.
0·042	Cloudy. Rain (7 to 11 a.m.) Dew (9 to 11 p.m.) ⊙ Halo (1.40 p.m.) ☾ Corona (11 p.m.)
0·000	Fine (11 a.m. to 6 p.m.), rest cloudy. Rain (4 and 5 a.m. and 9 and 10 p.m.) ☾ Halo (7 and 11 p.m.)
0·015	Rather cloudy. Dew (1 to 3, 5, and 6 a.m., 5 to 7 p.m.) Rain (8, 11 a.m. to 2 p.m., and 9 p.m.) ☾ Halo (mid. to 3 a.m., and 7 p.m.) Corona (10 p.m.)
0·025	Night and evening fine, rest cloudy. Rain (6 to 8 a.m.) Dew (7 to 11 p.m.) ☾ Corona (1 a.m.) Aurora Aust. (9 p.m.)
0·000	Fine. Dew (mid. to 2 a.m.) ☾ Halo (mid., 1, and 3 a.m., 7, and 9 to 11 p.m.) ⊙ Halo (9, 10, 11 a.m.)
0·000	Very cloudy. ☾ Halo (mid. to 3 a.m. and 6 to 11 p.m.) Corona (5 and 6 p.m.) ⊙ Halo (9 to 11 a.m.)
0·000	Very cloudy. Rain (11 p.m.) ☾ Halo (mid. and 1 a.m., and 8 to 11 p.m.) Corona (2 and 3 a.m.) ⊙ Halo (noon to 3 p.m.)
0·068	Very cloudy. Rain (mid. to 2 p.m.) Dew (11 p.m.) ☾ Halo (8 and 11 p.m.)
0·000	Very cloudy. Dew (mid. and 1 a.m.) ☾ Corona (1 to 6 a.m. and 8 p.m.) ⊙ Halo (noon).
0·000	Fine. (2 to 6 p.m.), rest cloudy. Dew (2 to 6 a.m., 6 to 10 p.m.) Fog (7 and 8 a.m., 8 to 11 p.m.)
0·000	Fine. Dew (mid. to 6 a.m., 8 to 11 p.m.) Fog (7 and 8 a.m.) Zodiacal light (6 p.m.)
0·000	Dense fog all day, except (mid. and 4 p.m.)
0·000	Fog (mid. to 8 a.m., 5 and 6 p.m. Dew (8 to 11 p.m. ☾ Corona (mid. to 5 a.m.) Zodiacal light (8 p.m.)
0·000	Fine (mid. to 6 p.m.), rest overcast. Dew (mid. and 1 a.m.) Aurora Aust. (3 a.m.) Rain (10 and 11 p.m.)
0·411	Very cloudy. ☾ Corona (5 a.m.) Rain (mid. to 5 a.m., 4 to 9 p.m.) Fog (7 to 9 a.m.)
...	
0·697	

35. MONTH OF JULY, 1858.

DAY OF MONTH.	TEMPERATURE OF AIR.			PRESSURE OF AIR.			PRESSURE OF VAPOR.			RELATIVE HUMIDITY.
	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.
1858.	°	°	°	Inches.	Inches.	Inches.	Inch.	Inch.	Inch.	(0—1.)
JULY 5	45·4	50·4	38·4	29·910	29·965	29·864	0·280	0·318	0·248	0·921
„ 6	46·5	53·7	40·4	29·917	29·969	29·868	0·299	0·339	0·269	0·943
„ 7	47·0	53·5	41·9	29·970	30·012	29·943	0·298	0·323	0·263	0·923
„ 8	49·1	57·1	43·5	29·980	30·052	29·920	0·310	0·380	0·260	0·888
„ 9	51·1	56·4	45·3	30·022	30·076	29·957	0·295	0·344	0·250	0·787
JULY 10	48·8	53·1	45·3	29·945	29·990	29·915	0·280	0·329	0·238	0·812
„ 11	46·3	55·3	40·4	29·978	30·002	29·950	0·297	0·333	0·240	0·944
„ 12	45·9	48·8	43·0	29·846	30·016	29·733	0·314	0·360	0·274	1·016
„ 13	45·0	49·7	43·0	29·735	29·755	29·714	0·275	0·302	0·239	0·920
„ 14	48·2	52·6	45·3	29·617	29·729	29·518	0·296	0·310	0·272	0·876
JULY 15	48·0	53·1	44·6	29·506	29·675	29·392	0·269	0·318	0·242	0·803
„ 16	48·3	54·9	43·5	29·854	30·054	29·696	0·263	0·285	0·241	0·776
„ 17	48·4	57·7	41·5	30·085	30·181	30·037	0·290	0·358	0·248	0·853
„ 18	48·3	56·2	38·1	30·188	30·232	30·150	0·312	0·368	0·248	0·920
„ 19	48·5	58·2	40·6	30·136	30·165	30·107	0·329	0·367	0·276	0·960
JULY 20	45·7	55·1	35·7	30·050	30·158	29·891	0·269	0·315	0·228	0·876
„ 21	52·5	58·9	45·5	29·864	30·000	29·801	0·317	0·357	0·273	0·801
„ 22	50·9	59·1	45·3	30·000	30·070	29·898	0·308	0·348	0·252	0·826
„ 23	50·7	54·6	45·5	29·625	29·867	29·540	0·326	0·366	0·276	0·881
„ 24	46·9	52·0	42·4	29·786	30·020	29·520	0·265	0·298	0·208	0·823
JULY 25	47·0	51·5	40·4	29·987	30·038	29·925	0·272	0·299	0·236	0·842
„ 26	49·1	54·2	46·4	29·804	29·924	29·687	0·309	0·351	0·284	0·875
„ 27	47·3	52·6	44·8	29·892	30·056	29·720	0·288	0·334	0·250	0·881
„ 28	46·8	51·7	43·0	30·104	30·145	30·057	0·243	0·281	0·220	0·757
„ 29	47·6	52·6	43·0	30·170	30·226	30·125	0·322	0·363	0·272	0·976
JULY 30	49·0	55·5	45·3	30·204	30·204	30·178	0·316	0·341	0·280	0·908
„ 31	45·5	53·5	39·3	30·154	30·189	30·112	0·301	0·331	0·249	0·987
AUGUST 1... ...	45·2	54·9	35·9	29·996	30·110	29·891	0·268	0·313	0·218	0·887
„ 2... ...	47·6	53·5	44·4	29·753	29·883	29·692	0·281	0·305	0·263	0·852
„ 3... ...	48·5	54·9	43·5	29·774	29·865	29·698	0·294	0·326	0·253	0·860
MEANS ...	47·84	54·18	42·51	29·928	30·022	29·850	0·293	0·332	0·252	0·879

MONTH OF JULY, 1858.

Pressure of Dry Air.	Wind.						Temperature of Surface Soil.			Maximum Temperature of Black Bulb Therm.
	Direction.			Force.						
	Mean.	Extreme from	Extreme to	Mean.	Max.	Min.	Mean.	Max.	Min.	
Inches.	° ′						°	°	°	°
29·630	233 36	E.	W.	1·25	4·0	1·0	43·9	58·0	37·0	...
29·618	355 20	N.E.	S.E. by E.	1·38	3·0	0·5	44·1	54·0	37·5	...
29·672	230 40	N.E.	W. by S.	1·85	4·0	0·5	45·7	55·6	40·8	60·6
29·670	192 28	E. by N.	S.W.	3·0	5·0	1·0	46·3	56·4	40·6	...
29·727	177 59	N.N.E.	N. ½ W.	4·74	6·0	2·0	47·9	59·5	42·6	65·9
29·665	180 0	N.N.E.	N.W.	4·46	7·0	1·0	47·2	57·1	43·9	...
29·681	139 50	All round.		1·31	2·0	0·5	45·7	58·6	37·9	67·7
29·532	136 6	N.E.	S.E.	2·08	6·0	1·0	44·7	48·7	41·0	...
29·460	169 35	N.E.	N. by W.	4·13	5·0	3·0	43·5	48·5	40·3	...
29·321	173 21	N.E. by N.	N.	3·83	5·0	3·0	46·1	51·8	42·8	53·4
29·237	215 29	N.N.E.	W. by S.	4·25	7·0	1·0	45·2	52·7	41·2	...
29·591	231 14	N.N.E.	W. by S.	2·58	4·0	1·0	46·3	55·8	40·6	61·7
29·795	237 32	N.	W. by S.	2·54	5·0	1·0	45·8	55·8	39·5	63·7
29·876	217 6	N.E.	W.S.W.	1·06	2·0	0·5	46·7	56·0	38·1	...
29·807	182 33	All round.		0·9	2·0	0·5	48·4	62·2	40·6	74·9
29·781	160 16	N.E.	N. by W.	2·5	5·0	1·0	45·3	59·5	35·9	63·7
29·547	191 52	N. by E.	W.	4·33	7·0	0·0	51·3	64·6	43·9	67·7
29·692	182 49	N.N.E.	N.W.	2·46	5·0	1·0	51·1	66·8	42·6	68·2
29·299	189 26	N.N.E.	W.	3·23	6·0	1·0	48·2	52·7	42·3	...
29·521	259 6	N.	W. ½ S.	3·88	7·0	1·0	47·6	61·5	38·4	...
29·715	179 14	N.N.E.	N.W.	3·42	5·0	1·0	44·9	55·3	38·1	53·6
29·495	171 22	E.	N. by W.	2·58	4·0	1·0	47·4	54·9	43·6	...
29·604	321 38	N.	S.	4·21	6·0	1·0	47·1	60·4	42·6	...
29·861	359 3	S.W.	N.E.	2·79	4·0	1·0	46·7	63·9	38·6	...
29·848	307 43	N.	S.S.E.	1·29	2·0	1·0	48·7	62·2	42·6	...
29·888	287 26	All round.		1·0	2·0	0·0	48·9	58·2	44·1	...
29·853	243 12	W.	N.E.	1·0	2·0	0·5	48·4	64·2	38·6	...
29·728	172 25	E.N.E.	N.N.W.	2·13	4·0	1·0	45·4	62·4	35·5	66·2
29·472	167 22	N.E.	N.W. by N.	4·0	5·0	3·0	47·2	60·9	42·6	58·7
29·480	239 31	N.N.E.	S.	1·33	3·0	0·5	49·7	63·3	42·8	60·0
29·655	...	...	...	2·65	4·47	1·05	46·85	58·05	40·55	...

MONTH OF JULY, 1858—*continued.*

DAY OF MONTH.	Amount of Cloud. (0—10.)			General Form of Cloud.	Electric Tension.			Ozone.		Hours of			
					Positive Mean.	No. of Registrations.							
	Mean.	Max.	Min.			Negative.	0	Day.	Night.	Fog.	Dew.	Hail.	Rain.
1858.													
July 5 ...	7·81	10·0	2·0	Nimb. & Cu. Str. Cir. Cu.	4·84	1	0	6·0	5·0	2·5	0·0	0·0	5·5
„ 6 ...	3·04	10·0	0·0	Cu. Str. Cir. Cu. Nimb.	4·92	0	0	7·0	4·0	3·0	6·0	0·0	0·1
„ 7 ...	6·46	10·0	1·0	Nimb. Cum. & Cu. Str.	3·40	1	0	8·0	5·0	0·0	1·5	0·0	2·25
„ 8 ...	6·89	10·0	0·0	Cu. Str. Cir. Cu. & Cir. Str.	2·07	1	1	2·0	5·0	0·0	2·0	0·0	0·6
„ 9 ...	5·95	10·0	1·0	Cu. Str. Nimb. Cir. Str.	1·31	2	6	...	6·0	0·0	1·0	0·0	0·0
July 10 ...	8·08	10·0	3·0	Nimb. and Cu. Str.	1·09	3	9	1·0	3·0	0·0	0·0	0·0	0·9
„ 11 ...	7·21	10·0	2·0	Nimb. Cu. Str. & Cir. Str.	4·52	1	1	...	5·0	1·0	3·0	0·0	3·7
„ 12 ...	7·23	10·0	1·0	Nimb. and Cu. Str.	1·39	3	7	...	2·0	0·0	0·0	0·0	10·0
„ 13 ...	7·27	10·0	0·5	Cu. Str. & Nimb.	0·97	0	3	5·0	7·0	0·0	0·0	0·0	4·3
„ 14 ...	7·15	10·0	2·0	Cu. Str. Nimb. Cir. Str.	0·55	0	10	2·0	6·0	0·0	0·0	0·0	0·0
July 15 ...	3·92	10·0	0·0	Cu. Str. Cum. Nimb.	0·96	0	10	...	5·0	0·0	0·0	0·0	0·4
„ 16 ...	5·33	10·0	0·0	Cum. & Cu. Str. Cir. Cu.	1·60	0	1	6·0	6·0	0·0	0·0	0·0	0·75
„ 17 ...	3·92	9·5	0·0	Cu. Str. & Nimb. Cir. Cu.	1·82	1	1	5·0	5·0	0·0	0·0	0·0	0·8
„ 18 ...	6·23	10·0	0·0	Cu. Str. & Nimb.	2·52	0	4	6·0	7·0	4·5	4·0	0·0	3·1
„ 19 ...	5·63	10·0	0·0	Nimb. Cir. Cum.	4·40	0	1	3·0	3·0	2·5	6·1	0·0	1·0
July 20 ...	2·52	10·0	0·0	Cu. Str. Cir. Str.	2·70	1	1	3·0	...	0·0	8·0	0·0	0·4
„ 21 ...	5·92	10·0	1·0	Cum. Str. Nimb. Cir. Cu.	1·15	0	8	3·0	5·0	0·0	0·0	0·0	1·15
„ 22 ...	6·71	10·0	1·0	Cir. Cu. Cu. Str.	2·27	0	2	3·0	5·0	0·0	0·0	0·0	0·0
„ 23 ...	7·29	10·0	0·0	Cu. Str. Cir. Cu. Nimb.	0·98	0	10	4·0	4·0	0·0	1·0	0·0	5·1
„ 24 ...	5·98	10·0	1·0	Cu. Str. Nimb. Cir. Cu.	2·06	0	1	3·0	4·0	0·0	0·0	0·0	2·3
July 25 ...	6·62	10·0	0·5	Cu. Str. Cir. Str. Cir. Cu.	1·67	0	3	5·0	5·0	0·0	2·0	0·0	0·0
„ 26 ...	9·46	10·0	7·0	Cu. Str. Nimb. Cir. Str. Cir. Cu.	1·44	0	7	6·0	3·0	0·0	0·0	0·0	6·65
„ 27 ...	7·42	10·0	3·0	Cu. Str. Nimb. Cir. Str.	3·94	0	2	...	4·0	0·0	0·0	0·0	7·45
„ 28 ...	4·17	8·0	1·0	Cir. Cu. Cu. Str.	3·72	0	0	3·0	6·0	0·0	0·0	0·0	0·3
„ 29 ...	9·67	10·0	8·0	Nimb. & Cu. Str.	4·25	0	0	7·0	...	1·0	0·0	0·0	6·85
July 30 ...	9·83	10·0	9·0	Cu. Str. Cir. Cu.	4·04	0	1	...	4·0	1·0	0·1	0·0	0·0
„ 31 ...	6·73	10·0	0·0	Cu. Str. Cir. Cu. & Cir. Str.	3·63	0	3	2·0	6·0	0·0	4·0	0·0	0·0
August 1 ...	5·21	10·0	0·0	Cu. Str. Nimb. Cir. Str.	3·55	0	0	3·0	3·0	0·0	6·0	0·0	0·2
„ 2 ...	7·67	10·0	1·0	Cu. Str. Cir. Cu. Nimb.	1·12	0	4	...	...	0·0	0·0	0·0	4·7
„ 3 ...	6·98	10·0	1·0	Cu. Str. & Nimb.	3·01	0	3	3·0	4·0	4·0	0·2	0·0	3·8
Means ...	6·48	9·92	1·53	...	2·53	...	...	4·17	4·56	...	...	...	..
Sums ...	...	...	...	...	...	14	99	...	...	19·5	44·9	0·0	72·3

MONTH OF JULY, 1858—*continued.*

Amount of Rain.	REMARKS.
Inches.	
0·342	Very cloudy. Rain (mid. to 5 a.m., 4 to 9 p.m.) Fog (7 to 9 a.m.) ☾ Corona (5 a.m.) Rainbow (3 p.m.) in S.W.
0·006	Fine (mid. to 9 p.m.) A few drops of misty rain (10 a.m. and 11 p.m.) Dew (mid. to 5 a.m.) Fog (6 to 9 p.m.) Zodiacal light (7 p.m.)
0·030	Cloudy (mid. to 5 p.m.) Rest fine. Rain (mid. to 4 a.m., 8 and 9 a.m., and 3 to 4 p.m.) Dew (6 to 7 p.m.)
0·024	Fine (mid. to 6 a.m., 8 to 11 p.m.) Rest cloudy. Rain (4 and 5 p.m.) Dew (10 and 11 p.m.)
0·000	Rather cloudy day. Evening fine. Dew (mid.) ⊙ Halo (10 and 11 a.m.) Clouds of dust (4 p.m.) Veil over sky.
0·009	Cloudy. Veil in the evening. Rain (9, 10, noon, and 7 p.m.)
0·064	Cloudy. Dew (1 to 3 a.m.) Rain (3 to 7 p.m.) Fog (8 p.m.) Zodiacal light (7 p.m.) Lightning in evening (S.E. and E.)
0.503	Cloudy. Lightning (mid. and 1 a.m.) Heavy rain (6 a.m. to 4 p.m.)
0·048	Clear (mid. to 3 a.m.) Rest cloudy. Zodiacal light (2 a.m.) Rain (7 a.m. to noon.) (2 p.m.) Squally.
0·000	Cloudy (mid. to 5 p.m.) Rest fine. Squally all day. Lightning in W. (9 p.m.)
0·008	Fine (mid. to 6 a.m.) (3 p.m. to 11 p.m.) Rest cloudy. Rain (noon and 1 p.m.) ☾ Corona (7 and 8 p.m.)
0·014	Cloudy. Rain (5 a.m.) Veil and ☾ Corona (6 p.m.)
0 034	Fine (mid. to 6 a.m.) (8 to 11 p.m.) Rest cloudy. Squally. Rain (3 to 4 p.m.)
0·006	Fine (mid. to 8 a.m.) Dew (3 to 6 a.m.) Fog (7 to 11 a.m.) Rain (noon, 7, 9 to 11 p.m.) Dull and hazy horizon.
0·024	Cloudy (mid. to 1 p.m.) Rest fine. Rain (1 and 3 a.m.) Fog (7 to 9 a.m.) Dew (5 to 11 p.m.)
0·013	Fine (mid. to 5 p.m.) Rest cloudy. Dew (mid. to 7 a.m.) Rain (11 p.m.) ☾ Halo and dense veil (6 p.m.) Rather squally.
0·043	Squally and dusty. Rain (6 to 8 p.m.)
0·004	Fine (mid. to noon). The rest dull. ☾ Corona (mid. to 2 a.m.) Zodiacal light (4 a.m.)
0·080	Very cloudy (until 8 p.m.) Misty rain (3, 6, 7, 10 a.m. to 4 p.m.) Dew (9 p.m.)
0·018	Squally. Veil and ☾ Corona (4 a.m.) Rain (3, 4, 6, 7 a.m.) (1, 2, 6, 8 and 9 p.m.)
0·010	Fine (mid. to 9 a.m.) The rest cloudy. Squally at noon. Dew (5 to 7 a.m.) ☾ Corona (mid. to 5 a.m.)
0·128	Very cloudy. ☾ Halo (mid. to 1 a.m.) Corona (9 and 11 p.m.) Heavy rain (4 a.m. to 4 p.m.) Light squalls.
0·245	Cloudy. ☾ Corona (mid. and 11 p.m.) Lunar rainbow (8 p.m.), colors distinct. Very squally, Rain (1 to 5, 10, 11 a.m.) (3 to 6, 9 and 10 p.m.)
0·028	Fine. Rain (11 a.m. and noon). ☾ Corona (mid. and 10 p.m.) Rainbow in morning. Slight squalls.
0·128	Densely overcast. Rain (2 to 10 a.m.) (3 and 8 p.m.) Horizon foggy.
0·000	Densely overcast. Fog (8 a.m.) Horizon hazy.
0·000	Very cloudy (until 4 p.m.) Fine evening. Dew (8 to 11 p.m.) Horizon hazy. ☾ Corona (2 a.m.)
0·000	Clear (mid. to 8 a.m.) The rest cloudy. Dew (mid. to 5 a.m.) ⊙ Halo (11 a.m. to 1 p.m.) Rain (11 p.m.)
0·013	Overcast. Light rain (mid., 2 to 6, 9 a.m.) (8 p.m.)
0·048	Rather overcast (mid. to 2 a.m., 5, 6 a.m.) and (11 p.m.) Fog (7 to 11 p.m.) Dew (6 p.m.) Zodiacal light (7 p.m.)
...	
1·879	

36. MONTH OF AUGUST, 1858.

DAY OF MONTH.	TEMPERATURE OF AIR.			PRESSURE OF AIR.			PRESSURE OF VAPOR.			RELATIVE HUMIDITY.
	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.
1858.	°	°	°	Inches.	Inches.	Inches.	Inch.	Inch.	Inch.	(0—1.)
August 4 ...	47·4	55·7	42·6	29·856	29·892	29·819	0·323	0·375	0·290	0·985
„ 5 ...	48·7	61·5	41·3	29·756	29·813	29·689	0·312	0·361	0·263	0·907
„ 6 ...	45·8	61·1	36·4	29·696	29·740	29·643	0·265	0·306	0·214	0·860
„ 7 ...	53·3	60·9	46·6	29·762	29·921	29·639	0·300	0·359	0·252	0·737
„ 8 ...	50·8	60·2	43·7	29·966	30·009	29·937	0·328	0·377	0·290	0·884
August 9 ...	53·4	60·6	47·7	29·818	29·955	29·624	0·316	0·339	0·291	0·773
„ 10 ...	52·0	58·4	49·3	29·397	29·607	29·269	0·336	0·377	0·279	0·866
„ 11 ...	49·4	53·5	46·4	29·459	29·661	29·294	0·344	0·372	0·302	0·975
„ 12 ...	49·1	54·2	46·4	29·672	29·722	29·624	0·298	0·321	0·281	0·854
„ 13 ...	48·2	51·5	46·2	29·788	29·886	29·709	0·296	0·321	0·272	0·876
August 14 ...	48·9	53·8	45·5	29·968	30·032	29·892	0·300	0·324	0·255	0·867
„ 15 ...	49·4	55·3	45·0	30·030	30·058	29·986	0·330	0·380	0·303	0·935
„ 16 ...	49·7	57·1	44·8	30·034	30·069	30·000	0·335	0·362	0·308	0·938
„ 17 ...	49·4	59·1	42·8	29·984	30·034	29·940	0·340	0·398	0·293	0·963
„ 18 ...	50·8	60·2	39·9	29·824	29·944	29·707	0·286	0·321	0·257	0·771
August 19 ...	50·3	58·9	42·6	29·504	29·677	29·374	0·290	0·334	0·229	0·795
„ 20 ...	46·6	53·7	40·8	29·624	29·664	29·561	0·248	0·291	0·223	0·780
„ 21 ...	51·8	60·6	46·6	29·588	29·726	29·510	0·292	0·422	0·242	0·758
„ 22 ...	53·3	62·4	45·5	29·874	29·945	29·726	0·293	0·326	0·252	0·720
„ 23 ...	57·8	65·4	49·5	29·911	29·979	29·793	0·290	0·320	0·236	0·605
August 24 ...	54·7	62·4	43·5	29·759	29·926	29·664	0·266	0·325	0·225	0·621
„ 25 ...	46·4	56·9	38·6	30·011	30·062	29·934	0·250	0·299	0·215	0·791
„ 26 ...	47·9	61·5	35·5	30·022	30·075	29·959	0·247	0·279	0·208	0·740
„ 27 ...	53·1	68·1	38·4	29 898	30·000	29·820	0·244	0·300	0·194	0·604
„ 28 ...	58·6	71·1	48·8	29·722	29·841	29·582	0·283	0·329	0·243	0·575
August 29 ...	50·2	58·6	43·5	29·672	29·721	29·623	0·282	0·318	0·225	0·775
„ 30 ...	49·9	56·2	45·3	29·581	29·720	29·519	0·295	0·342	0·237	0·819
„ 31 ...	51·8	60·2	45·3	29·794	29·907	29·680	0·324	0·367	0·281	0·841
September 1 ...	54·2	63·1	44·6	29·882	29·945	29·800	0·304	0·320	0·276	0·722
„ 2 ...	52·8	60·0	47·0	29·785	29·953	29·701	0·307	0·373	0·268	0·768
Means ...	50·86	59·41	44·0	29·788	29·883	29·701	0·297	0·341	0·257	0·803

MONTH OF AUGUST, 1858.

Pressure of Dry Air.	Wind. Direction. Mean.	Extreme from	Extreme to	Force. Mean.	Max.	Min.	Temperature of Surface Soil. Mean.	Max.	Min.	Maximum Temperature of Black Bulb Therm.
Inches.	° ′						°	°	°	°
29·533	128 53	N.E.	S.E.	1·0	1·0	1·0	50·0	68·4	40·8	69·5
29·444	102 4	S.	N.	0·77	1·0	0·0	52·1	72·8	42·5	77·6
29·431	169 25	N.E.	N.W. by N.	3·67	7·0	1·0	49·2	66·6	38·1	69·9
29·462	210 12	N.	W.	3·04	5·0	1·0	53·8	67·5	45·2	70·1
29·638	158 15	S. by E.	N.N.W.	1·46	3·0	0·5	53·5	75·0	42·8	77·4
29·502	141 15	E.N.E.	N.	2·42	5·0	1·0	53·3	64·6	47·2	62·0
29·061	157 17	S.	N.	2·83	5·0	0·5	50·8	60·2	46·5	57·8
29·115	309 55	W.	S.	4·14	7·0	1·0	48·8	52·9	45·9	...
29·374	284 1	W.	S.W.	6·58	8·0	5·0	47·3	53·6	44·8	...
29·492	300 24	W.	S.W. by S.	5·21	7·0	4·0	46·2	49·4	44·3	...
29·668	308 44	W. by S.	S. by W.	3·58	6·0	2·0	47·5	53·6	44·8	...
29·700	317 23	W. ½ S.	S.	2·83	4·0	1·0	51·3	66·8	44·8	62·6
29·699	301 1	W. by N.	S. ½ E.	1·38	4·0	0·5	52·9	71·4	44·8	65·9
29·644	311 1	W.	S.E.	0·9	2·0	0·5	51·9	72·3	42·8	68·6
29·538	159 27	N.E.	N.N.W.	2·9	5·0	0·5	51·3	69·0	40·8	71·4
29·214	216 56	N.N.E.	W. by S.	4·38	6·0	2·0	49·0	62·6	40·8	63·7
29·376	237 35	N.W. by N.	W.	4·04	6·0	1·0	46·6	60·6	38·4	58·5
29·296	228 45	N. by E.	W. by S.	3·88	6·0	1·0	49·4	59·1	43·2	...
29·581	216 4	N.E.	W.	3·13	5·0	1·0	54·9	75·8	43·2	74·1
29·621	168 30	N.E. by N.	N. by W.	4·67	7·0	1·0	57·6	76·7	46·5	73·7
29·493	203 19	N.N.E.	W. ½ S.	5·04	7·0	1·0	53·5	68·6	41·0	...
29·761	234 37	N.W.	N.E.	1·13	2·0	1·0	50·0	72·1	37·7	66·6
29·775	142 56	N.E. by E.	N.	2·17	3·0	1·0	51·6	75·8	36·2	73·0
29·654	145 48	S.W.	N.N.W.	2·22	4·0	1·0	55·5	79·2	38·1	79·2
29·439	145 14	All round.		1·92	4·0	0·5	61·9	93·3	45·0	81·4
29·390	235 2	N.E.	W.	2·96	6·0	1·0	49·3	64·6	41·0	62·6
29·286	254 8	N.N.W.	W. by S.	4·13	7·0	2·0	48·8	62·8	40·3	...
29·470	267 32	All round.		2·21	4·0	1·0	52·7	70·6	42·3	65·0
29·578	185 25	N.N.E.	N.W. by W.	2·5	5·0	1·0	57·8	84·9	42·3	72·3
29·478	188 48	N.N.E.	S.W.	3·5	6·0	1·0	50·9	59·3	45·9	...
29·491	...	...	...	3·02	4·93	1·2	51·65	67·68	42·6	...

MONTH OF AUGUST, 1858—*continued.*

DAY OF MONTH.	Amount of Cloud. (0—10.)			General Form of Cloud.	Electric Tension.			Ozone.		Hours of			
					Positive Mean.	No. of Registrations.							
	Mean.	Max.	Min.			Negative.	0.	Day.	Night.	Fog.	Dew.	Hail.	Rain.
1858.													
August 4 ...	6·04	10·0	0·0	Cir. Cum.	5·53	0	0	2·0	3·0	11·0	0·0	0·0	0·2
„ 5 ...	5·48	10·0	0·0	Cir. Cu. & Cu. Str.	3·84	0	0	2·0	6·0	6·0	3·0	0·0	0·0
„ 6 ...	3·54	9·0	0·0	Cir. Cum.	2·99	0	1	...	2·0	0·0	6·0	0·0	0·0
„ 7 ...	6·37	10·0	0·0	Cir. Cu. & Cu. Str.	2·07	1	0	3·0	2·0	0·0	0·0	0·0	0·5
„ 8 ...	5·77	10·0	1·0	Cir. Cu. & Cu. Str.	3·88	0	0	2·0	6·0	1·0	1·5	0·0	0·3
August 9 ...	9·33	10·0	7·0	Cum. Str. & Nimb.	2·56	0	2	2·0	3·0	0·0	0·0	0·0	0·2
„ 10 ...	9·56	10·0	8·0	Nimb.	0·83	2	8	...	...	0·0	0·0	0·0	10·2
„ 11 ...	9·75	10·0	9·0	Nimb.	1·16	1	3	2·0	2·0	0·0	0·0	0·0	14·8
„ 12 ...	8·42	10·0	6·0	Nimb.	1·56	0	7	5·0	...	0·0	0·0	0·0	3·55
„ 13 ...	9·75	10·0	8·0	Nimb.	1·52	0	4	4·0	...	0·0	0·0	0·0	3·15
August 14 ...	9·35	10·0	5·0	Nimb.	2·66	0	3	7·0	5·0	0·0	0·0	0·0	3·9
„ 15 ...	6·96	10·0	1·0	Cir. Cu. & Nimb.	2·35	0	2	2·0	...	0·0	0·0	0·0	5·7
„ 16 ...	5·62	10·0	0·0	Cum. Str.	2·81	0	3	5·0	5·0	3·0	2·5	0·0	2·6
„ 17 ...	7·83	10·0	1·0	Nimb.	4·03	0	1	5·0	...	4·0	2·0	0·0	5·4
„ 18 ...	5·94	10·0	0·5	Cir. Cu. & Cir. Str.	3·81	1	0	2·0	...	4·0	0·0	0·0	0·2
August 19 ...	8·19	10·0	3·0	Cir. Cu. & Cu. Str.	1·52	3	3	...	3·0	0·0	0·0	0·0	1·5
„ 20 ...	5·87	10·0	0·5	Cir. Str.	1·97	0	2	...	...	0·0	0·0	0·0	0·75
„ 21 ...	6·92	10·0	2·0	Cir. Cu. & Cu. Str.	1·60	0	4	5·0	...	0·0	0·0	0·0	1·75
„ 22 ...	7·74	10·0	0·0	Cir. Cu. & Cu. Str.	2·44	0	0	...	4·0	0·0	0·0	0·0	0·2
„ 23 ...	3·77	8·0	0·0	Cir. Cu. & Cir. Str.	1·46	2	5	2·0	2·0	0·0	0·0	0·0	0·0
August 24 ...	6·13	9·0	0·0	Cir. Cum.	2·71	3	1	...	...	0·0	1·0	0·0	0·6
„ 25 ...	2·54	7·0	0·5	Cir. Cu. & Cir. Str.	4·89	0	0	6·0	7·0	2·5	5·0	0·0	0·0
„ 26 ...	1·12	5·0	0·0	Cir. Str.	4·50	0	0	1·0	3·0	0·0	3·0	0·0	0·0
„ 27 ...	3·70	10·0	0·0	Cir. Cu. & Str.	3·87	2	2	1·0	3·0	0·0	2·0	0·0	0·5
„ 28 ...	3·46	8·0	0·0	Cir. Cum.	4·13	3	0	...	...	0·5	0·0	0·0	0·4
August 29 ...	8·94	10·0	0·0	Cu. Str. & Nimb.	2·50	3	1	5·0	6·0	0·0	0·0	0·0	2·4
„ 30 ...	8·46	10·0	1·0	Nimb.	2·55	1	2	7·0	3·0	0·0	0·0	0·0	4·75
„ 31 ...	7·58	10·0	2·0	Cir. Cu. & Cu. Str.	2·91	0	0	...	5·0	0·0	0·0	0·0	0·8
September 1 ...	3·55	10·0	0·0	Cu. Str. & Cir. Cu.	3·66	0	0	3·0	5·0	0·0	2·0	0·0	0·0
„ 2 ...	8·00	10·0	0·0	Nimb.	1·44	3	6	...	4·0	0·0	0·0	0·0	9·4
Means ...	6·52	9·53	1·85	...	2·79	...	...	3·48	3·95	...	...	...	...
Sums	...	...	...	...	...	25	60	...	...	32·0	28·0	0·0	73·75

MONTH OF AUGUST, 1858—*continued.*

Amount of Rain.	REMARKS.
Inches.	
0·010	Cloudy (mid. to 3 p.m.)—the rest fine. ☾ Corona (5 a.m.) Fog (4 to 9 a.m.,) (6 to 11 p.m.) Zodiacal light (7 p.m.)
0·003	Cloudy (mid. to 9 a.m.) Fog (mid. and 1, 6 to 8 a.m.), (10 and 11 p.m.) Dew (4 and 5 a.m., 9 p.m.) Thunder to Westward (noon).
0·0	Fine. Dew (1 to 6 a.m.)
0·010	Cloudy in morning. Afterwards fine. Rain (5 and 6 p.m.) in large drops.
0·002	Rather cloudy in morning and evening. Rain (2 and 4 a.m.) Dew (5 and 6 a.m.) Fog (7 a.m.)
0·0	Densely overcast. Rain (1 a.m. and 11 p.m.)
0·112	Densely overcast. Rain (1 to 3, 7 and 8 a.m., 5 to 11 p.m.) Squally in morning.
0·389	Densely overcast. Rain (mid. to 2 a.m., 4 a.m. to 3 p.m., 6 to 11 p.m.) Squally (8 a.m. to 7 p.m.)
0·063	Cloudy. Heavy squalls in afternoon. Rain (mid. to 3 a.m., 7 to 9 a.m., 7 to 9 p.m.)
0·011	Densely clouded. Very squally. Rain (8 and 9 a.m., 11 to 2 p.m., 6, 9 to 11 p.m.)
0·035	Densely clouded. Rain (mid. to 5 a.m.) (11 p.m.) ☾ Corona (6 p.m.)
0·259	Clouded (mid. to 9 a.m.) and (6 to 11 p.m.) Heavy rain (mid. to 6 a.m.)
0·008	Cloudy (mid. to 9 a.m.)—the rest fine. Rain (1 to 4 a.m.) Dew (6 to 8 p.m.) Fog (9 to 11 p.m.) ☾ Corona (9 p.m.)
0·055	Very cloudy (mid. to 4 p.m.)—the rest clearer. Rain (mid. to 6 a.m.) Fog (7 a.m.) (9 to 11 p.m.) Dew (7 and 8 p.m.) ☾ Halo (7 to 11 p.m.)
0·0	Very cloudy (4 to 6 a.m.) (7 to 11 p.m.) Fog (mid. to 3 a.m.) Rain (11 p.m.) Thin veil and ☾ Halo (7 to 9 p.m.)
0·003	Very cloudy (until 10 a.m.), the rest a little clearer. Rain (5 and 6 a.m.) and (2 and 5 p.m.) Heavy squalls and dust (11 a.m. to 2 p.m.)
0·006	Fine (mid. to 9 a.m.) ☾ Corona (mid.) Halo (8 p.m.) Rain (5 a.m.) and (3 to 6 p.m.)
0·039	Cloudy. Rain (1 and 2 a.m.) (noon and 1 p.m.) (4 and 7 p.m.) Squally. Rainbow (3 p.m.) ☾ Corona (11 p.m.)
0·0	Very cloudy (mid. to 6 a.m.), the rest fine. Rain (4 p.m.) ☾ Corona (mid.)
0·0	Fine until (8 p.m.) Veil over the sky. Horizon very clear.
0·041	Cloudy sometimes. Rain (2 to 4). Dew (8 and 9 p.m.) ☾ Corona (2 a.m. and 9 p.m.) Squally. Lightning S. by E. (10 p.m.)
0·0	Fine. Dew (1 to 3 a.m.) (5 and 6 a.m.) Fog (6 to 8 p.m.) Horizon hazy. ☾ Halo (8 p.m.)
0·0	Fine. Dew (3 to 5 a.m.) ☾ Corona (mid. and 11 p.m.) Halo (2 a.m.)
0·0	Fine until 6 p.m. Squalls and lightning in evening. Rain (9 to 11 p.m.) Dew (5 to 6 a.m.)
0·001	Cloudy with lightning (mid. to 6 a.m.) Rain (mid. 1 and 4 a.m.) Fog (9 a.m.) Zodiacal light (8 p.m.)
0·106	Fine and clear (3 to 8 a.m.), the rest very cloudy. Rain (2 to 3 a.m.) and (2 to 5 p.m.) Squally.
0·064	Very cloudy. Rain (mid. to 2 a.m.), (6, 7, 9, 10 a.m., noon), (2, 3, 7, 9, and 11 p.m.)
0·013	Rain (6 a.m. and noon). Rather cloudy all day. Zodiacal light (7 p.m.)
0·0	Fine. Dew (5 and 6 a.m.) Zodiacal light (9 p.m.)
0·227	Fine (mid. to 4 a.m.), the rest very cloudy. Rain (1 p.m. to 11 p.m.)
...	
1·457	

37. MONTH OF SEPTEMBER, 1858.

DAY OF MONTH.	Temperature of Air.			Pressure of Air.			Pressure of Vapor.			Relative Humidity.
	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.
1858.	°	°	°	Inches.	Inches.	Inches.	Inch.	Inch.	Inch.	(0—1.)
September 3 ...	48·6	53·9	42·5	29·993	30·049	29·956	0·283	0·349	0·253	0·825
„ 4 ...	51·0	61·3	43·3	29·815	29·963	29·664	0·313	0·357	0·267	0·837
„ 5 ...	52·5	64·2	43·9	29·503	29·652	29·434	0·316	0·371	0·280	0·798
„ 6 ...	50·2	56·4	47·0	29·547	29·658	29·458	0·325	0·361	0·295	0·893
„ 7 ...	49·3	55·0	46·1	29·671	29·753	29·624	0·318	0·342	0·301	0·903
September 8 ...	51·2	59·7	45·7	29·749	29·779	29·737	0·302	0·355	0·257	0·801
„ 9 ...	49·1	57·0	40·1	29·814	29·974	29·731	0·282	0·327	0·248	0·808
„ 10 ...	51·5	66·8	35·9	29·873	29.978	29·746	0·263	0·312	0·210	0·690
„ 11 ...	50·4	59·1	42·4	29·693	29·812	29·629	0·305	0·400	0·250	0·833
„ 12 ...	45·3	52·6	39·9	29·902	29·952	29·861	0·279	0·307	0·241	0·921
September 13 ...	49·2	57·5	40·1	29·748	29·902	29·505	0·273	0·313	0·232	0·778
„ 14 ...	54·4	63·7	46·6	29·396	29·499	29·339	0·296	0·347	0·245	0·698
„ 15 ...	48·1	56·4	40·4	29·509	29·748	29·380	0·247	0·290	0·195	0·735
„ 16 ...	48·8	58·6	40·7	29·930	30·098	29·765	0·280	0·342	0·216	0·812
„ 17 ...	53·3	64·6	45·5	30·162	30·220	30·102	0·308	0·352	0·277	0·757
September 18 ...	57·2	69·3	41·5	30·063	30·172	29·918	0·290	0·319	0·261	0·618
„ 19 ...	62·3	72·2	55·3	29·788	29·899	29·719	0·313	0·398	0·236	0·557
„ 20 ...	57·7	64·2	51·8	29·644	29·733	29·543	0·314	0·382	0·236	0·658
„ 21 ...	52·5	59·7	46·6	29·672	29·734	29·560	0·306	0·348	0·262	0·773
„ 22 ...	53·1	55·9	47·9	29·415	29·651	29·288	0·314	0·398	0·227	0·777
September 23 ...	53·2	64·0	46·8	29·281	29·322	29·197	0·318	0·384	0·255	0·783
„ 24 ...	49·2	54·2	44·2	29·437	29·755	29·270	0·268	0·337	0·219	0·764
„ 25 ...	51·1	59·5	45·1	29·947	30·024	29·784	0·316	0·356	0·280	0·843
„ 26 ...	50·7	60·0	41·2	29·983	30·028	29·936	0·291	0·334	0·248	0·786
„ 27 ...	53·4	61·5	47·7	29·933	29·973	29·897	0·302	0·345	0·251	0·738
September 28 ...	54·2	64·6	49·8	29·779	29·951	29·595	0·328	0·381	0·289	0·779
„ 29 ...	49·6	54·2	42·6	29·793	30·069	29·608	0·294	0·368	0·228	0·826
„ 30 ...	49·4	61·1	42·6	30·112	30·162	30·079	0·294	0·334	0·252	0·833
October 1 ...	50·1	60·4	40·1	30·186	30·256	30·110	0·299	0·369	0·252	0·826
„ 2 ...	49·8	58·2	38·7	30·261	30·320	30·021	0·302	0·351	0·246	0·844
Means ...	51·55	60·19	44·07	29·786	29·903	29·682	0·298	0·351	0·250	0·783

MONTH OF SEPTEMBER, 1858.

Pressure of Dry Air.	Wind.						Temperature of Surface Soil.			Maximum Temperature of Black Bulb Therm.
	Direction.			Force.						
	Mean.	Extreme from	Extreme to	Mean.	Max.	Min.	Mean.	Max.	Min.	
Inches.	° ′						°	°	°	°
29·710	4 38	S. ½ W.	S.E.	3·46	6·0	1·0	48·8	65·5	40·3	58·3
29·502	40 5	S.	N.	1·96	4·0	1·0	54·0	73·4	40·8	67·1
29·187	163 34	All round.		1·46	4·0	1·0	56·2	75·8	43·9	74·8
29·222	292 39	N.W.	S.W. by S.	3·04	6·0	1·0	51·8	64·1	46·1	...
29·353	280 17	W.	S.W. ½ S.	5·0	6·0	3·0	49·0	59·1	44·7	...
29·447	235 1	N.N.E.	W.	2·42	4·0	1·0	53·3	68·5	44·1	72·7
29·532	183 19	All round.		2·54	4·0	1·0	49·1	65·0	38·8	65·8
29·610	161 54	N.N.E.	N. by W.	2·62	6·0	1·0	53·3	78·5	35·3	77·7
29·388	267 3	N. by E.	S.W.	2·25	4·0	1·0	48·9	58·4	40·8	...
29·623	290 21	W.	S.S.W.	3·42	6·0	1·0	45·6	56·1	38·4	...
29·475	199 11	E.N.E.	W.S.W.	1·96	4·0	1·0	52·8	74·5	38·6	77·9
29·100	183 2	N.N.E.	N.W. by N.	4·67	6·0	2·0	59·1	75·6	44·3	73·9
29·262	235 29	N.E. ½ N.	W.	4·0	7·0	1·5	49·4	67·0	37·9	63·3
29·650	238 53	N.W. by N.	W. by S.	2·33	4·0	1·0	50·6	63·2	40·7	...
29·854	208 22	All round.		1·35	3·0	0·5	57·3	84·2	42·3	77·0
29·773	173 51	N.E.	N.N.W.	3·46	6·0	1·0	58·8	80·9	42·1	79·3
29·475	191 41	All round.		2·92	5·0	1·0	67·2	95·9	54·0	86·5
29·330	265 9	E.N.E.	S.W.	2·29	6·0	1·0	61·2	84·2	51·6	66·7
29·366	279 22	N.N.E.	S.E.	3·02	7·0	1·0	57·8	78·5	46·9	...
29·101	177 6	N.N.E.	N.N.W.	4·79	10·0	3·0	51·7	60·2	47·4	...
28·963	230 4	N. by W.	S.W.	3·29	6·0	1·0	53·9	73·6	44·7	...
29·169	262 8	N.W. by N.	S.W. by S.	4·23	7·0	2·0	49·7	62·6	39·9	...
29·631	283 24	W.N.W.	S. ½ E.	2·08	4·0	1·0	53·0	70·1	44·9	...
29·692	264 50	N.N.W.	W.S.W.	1·96	5·0	1·0	50·3	66·8	39·9	...
29·631	227 42	N. ½ E.	W.	2·44	5·0	0·5	53·5	67·7	46·5	...
29·451	177 1	E.N.E.	W.	2·44	7·0	0·5	54·2	75·6	47·8	74·3
29·499	301 22	N.W. by N.	S. ½ W.	2·94	6·0	0·5	48·4	58·4	41·4	...
29·818	304 12	W	S.E. by S.	1·33	3·0	0·5	54·1	73·2	41·0	...
29·887	310 48	N.W. by N.	S.E. by E.	1·63	3·0	1·0	56·3	83·1	38·8	68·7
29·959	11 38	All round.		1·42	2·0	1·0	57·8	85·5	38·8	71·8
29·488	...	...	...	2·76	5·2	1·13	53·57	71·5	42·76	...

MONTH OF SEPTEMBER, 1858—*continued.*

DAY OF MONTH.	Amount of Cloud. (0—10.)			General Form of Cloud.	Electric Tension.			Ozone.		Hours of			
					Positive	No. of Registrations.							
	Mean.	Max.	Min.		Mean.	Negative.	0.	Day.	Night.	Fog.	Dew.	Hail.	Rain.
1858.													
September 3 ...	7·73	10·0	2·0	Cu. Str. & Nimb.	3·69	0	0	...	5·0	0·25	0·0	0·0	2·05
„ 4 ...	3·75	9·0	0·0	Cir. Cum. & Cum. Str.	3·97	0	0	2·0	3·0	2·0	2·9	0·0	0·0
„ 5 ...	8·42	10·0	4·0	Nimb.	3·81	0	0	1·0	2·0	2·0	0·0	0·0	1·25
„ 6 ...	8·19	10·0	2·0	Nimb.	3·12	1	2	6·0	...	0·0	0·0	0·0	4·6
„ 7 ...	9·67	10·0	8·0	Nimb.	2·48	1	1	6·0	6·0	0·0	0·0	0·0	4·7
September 8 ...	9·46	10·0	7·0	Cum. Str. & Nimb.	3·13	0	0	5·0	5·0	0·0	0·0	0·0	0·2
„ 9 ..	4·63	10·0	0·0	Cir. Cu. & Cu. Str.	3·42	0	1	2·0	4·0	2·5	2·0	0·0	1·35
„ 10 ...	4·67	10·0	0·0	Cum. Str.	3·53	4	2	2·0	...	3·0	2·0	0·0	0·0
„ 11 ...	9·70	10·0	5·0	Nimb.	1·48	3	2	...	3·0	0·0	0·0	0·0	5·9
„ 12 ...	6·27	10·0	3·0	Nimb.	2·51	4	2	...	7·0	0·0	0·0	0·0	3·75
September 13 ...	6·31	10·0	1·0	Cir. Cum. & Nimb.	3·31	1	0	2·0	8·0	0·0	0·0	0·0	2·25
„ 14 ...	6·73	10·0	1·0	Cir. Cum. & Nimb.	1·83	1	5	3·0	...	0·0	0·0	0·0	2·2
„ 15 ...	4·73	10·0	0·0	Cir. Cum. & Nimb.	2·37	2	1	...	5·0	0·0	0·0	0·3	1·15
„ 16 ...	6·77	10·0	0·5	Cum. Str. & Nimb.	3·18	1	0	3·0	4·0	0·0	0·0	0·0	0·8
„ 17 ...	3·96	9·0	0·0	Cir. Cum.	4·62	0	0	3·0	4·0	0·2	0·5	0·0	0·0
September 18 ...	3·37	9·0	0·5	Cir. Cum.	2·98	2	4	1·0	3·0	0·0	5·5	0·0	0·05
„ 19 ...	6·12	10·0	0·0	Cir. Cum. & Cu. Str.	1·55	0	3	...	2·0	0·0	0·0	0·0	1·25
„ 20 ...	8·21	10·0	1·0	Cum. Str.	2·21	1	0	3·0	...	0·0	0·0	0·0	0·2
„ 21 ...	6·80	10·0	0·0	Cir. Cum. & Nimb.	3·48	3	1	...	1·0	2·5	0·0	0·0	2·6
„ 22 ...	8·95	10·0	3·0	Nimb.	2·59	4	2	...	2·0	0·0	0·0	0·0	5·75
September 23 ...	8·65	10·0	3·0	Nimb.	3·06	3	1	...	...	0·0	0·0	0·0	5·25
„ 24 ...	6·98	10·0	0·0	Cir. Cum. & Nimb.	2·12	2	2	2·0	...	0·0	0·0	0·0	1·3
„ 25 ...	8·81	10·0	1·0	Cum Str. & Nimb.	2·56	0	3	3·0	8·0	0·0	0·0	0·0	2·75
„ 26 ...	5·00	10·0	1·0	Cir. Cum. & Cu. Str.	2·44	2	1	6·0	9·0	0·0	1·0	0·0	0·45
„ 27 ...	9·56	10·0	7·0	Cum. Str. & Nimb.	1·05	0	7	...	4·0	0·0	0·0	0·0	0·35
September 28 ...	7·71	10·0	0·5	Cum. Str. & Nimb.	3·07	4	2	4·0	3·0	0·0	0·0	0·0	3·2
„ 29 ...	6·87	10·0	1·0	Cum. Str. & Nimb.	3·19	1	4	...	4·0	0·0	0·0	0·0	3·9
„ 30 ...	7·92	10·0	1·0	Cum. Str.	4·12	0	0	...	...	0·0	0·0	0·0	1·2
October 1 ...	4·46	10·0	0·5	Cir. Cum. & Cu. Str.	4·27	0	0	3·0	...	0·0	3·0	0·0	0·75
„ 2 ...	0·69	3·0	0·0	Cir. Cum.	5·16	0	1	0·0	2·0	1·0	5·2	0·0	0·0
Means ...	6·70	9·67	1·77	...	3·01	...	...	3·0	4·27	...	...	...	...
Sums	...	...	...	...	...	40	47	...	...	13·45	22·1	0·3	59·2

MONTH OF SEPTEMBER, 1858—*continued.*

Amount of Rain.	REMARKS.
Inches.	
0·103	Very cloudy. Rain (3 and 4 a.m.) and (2 to 4 p.m.) Fog (7 a.m.) Horizon misty.
0·0	Fine. Dew (5 and 6 a.m.) (7 and 8 p.m.) Fog (10 and 11 p.m.) Zodiacal light (7 and 8 p.m.)
0·002	Cloudy. Fog (mid. and 1 a.m.) Rain (7 and 8 a.m.) Horizon clear.
0·187	Clear (1 to 3 p.m.), the rest cloudy. Rain (5 to 11 a.m.) (5 to 7 and 9 to 11 p.m.) Squally.
0·073	Very cloudy and stormy. Rain (3 to 6 a.m.) (10 a.m. to 1 p.m.) (5, 6, and 9 p.m.) Squally sometimes.
0·017	Densely clouded. Rain (8 p.m.) Zodiacal light (9 p.m.) Squally (10 p.m.)
0·029	Rather cloudy (mid. to 4 p.m.), the rest very clear. Rain (1 a.m.) (noon, 1 and 4 p.m.) Fog (7, 8, 10, and 11 p.m.) Dew (9 to 11 p.m.)
0·008	Clear (mid. to 6 a.m.) (11 a.m. to 3 p.m.) Dew (mid. and 1 a.m.) Fog (3, 4, and 7 a.m.) Veil cloud, hot wind, and dust.
0·441	Densely clouded. Rain (10 a.m. to 9 p.m.) Squally in afternoon.
0·156	Cloudy. Rain (3 to 9, 11 a.m.) (1 to 4, 11, p.m.) Heavy squalls in morning. Windtrees (7 p.m.) ☾ Corona (8 p.m.)
0·057	Fine (5 a.m. to 1 p.m.), the rest cloudy. Rain (1 to 4 a.m.) and (11 p.m.) Lightning in E. (mid.)
0·019	Fine (6 a.m. to 6 p.m.) Rain (mid. to 2 a.m.) (8 and 9 p.m.) Squally all day. Lightning in S.W. (10 p.m.)
0·133	Veil over sky. Rain (mid. and 6 a.m.) (4 and 5 p.m.) Hail (4 and 5 p.m.) Clouds of dust (2 p.m.) ☾ Rainbow (mid.) Corona (9 p.m.) ☉ Rainbow (4 p.m.)
0·025	Cloudy. Rain (11 a.m.) (3 to 5 p.m.) Light squalls. Horizon hazy. ☾ Corona (10 p.m.)
0·0	Fine day. Horizon very clear. Dew (4 a.m.) Fog (6 a.m.) Veil (3 a.m.) Pleasant weather.
0·0	Very clear until (5 p.m.) Dew (mid. to 5 a.m.) Rain (8 p.m.) ☾ Corona (mid.) Squally (2 p.m.)
0·0	Densely overcast after (4 p.m.) Rain (8 to 11 p.m.) Squally in morning. ☉ Halo (1 p.m.) Veil. Distant thunder (11 p.m.)
0·004	Very cloudy. Rain (6 p.m.) ☾ Corona (7 p.m.) Aurora Aust. (10 p.m.) Horizon hazy.
0·039	Cloudy (mid. to 11 a.m.), rest fine. Rain (6 to 9 a.m.) (11 a.m. to 1 p.m.) (3 p.m.) Fog (8 to 11 p.m.) Aurora (9 p.m.)
0·098	Cloudy. Rain (6 a.m.) (2 to 5 and 8 to 11 p.m.) ☾ Halo (mid. to 2 a.m.) Hot wind; very squally. Clouds of dust. Lightning in S.W. (8 p.m.)
0·188	Very cloudy. Rain (1 to 3 and 6 a.m.) and (4 to 9 p.m.) Windtrees in the morning.
0·014	Very cloudy. Rain (3 p.m.) ☾ Corona (4 a.m.) Lightning in S.E. (7 p.m.) ☾ Corona (9 p.m.)
0·112	Very cloudy. Rain (mid. to 5 a.m.) (6 to 8 p.m.) Horizon hazy in the morning.
0·015	Fine (1 to 8 a.m.) and (5 to 8 p.m.) Dew (6 a.m.) Rain (10 a.m.) (3 and 4 p.m.) ☾ Corona (3 a.m.)
0·002	Densely overcast. Rain (4 and 8 p.m.) Dull and squally in morning.
0·114	Fine (6 to 11 a.m.) Rest of day very cloudy. Rain (1 to 5 p.m.) Hot wind. Clouds of dust. Zodiacal light (8 p.m.)
0·111	Fine (2 to 7 p.m.) Rain (8 a.m. to 1 p.m.) (6 to 7 p.m.) Heavy squall (10 a.m.)
0·012	Cloudy. Rain (1 a.m.) (4 to 6 a.m.) and (10 p.m.) Horizon dim and hazy. Veil over sky (8 p.m.)
0·001	Clear (mid. to 5 a.m.) (2 to 5 p.m.) and (9 to 11 p.m.) Dew (1, 2, and 5 a.m.) Rain (9 a.m.) Windtrees (3 a.m.) Horizon dim.
0·0	Very fine and clear. Dew (1 to 3, 5 a.m.) (10 and 11 p.m.) Fog (4 a.m.) Horizon hazy. Wind unsteady. Zodiacal light (7 p.m.)
...	
1·060	

38. MONTH OF OCTOBER, 1858.

DAY OF MONTH.	TEMPERATURE OF AIR.			PRESSURE OF AIR.			PRESSURE OF VAPOR.			RELATIVE HUMIDITY.
	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.
1858.	°	°	°	Inches.	Inches.	Inches.	Inch.	Inch.	Inch.	(0—1.)
October 3 ...	55·4	73·6	40·6	30·266	30·308	30·204	0·332	0·393	0·268	0·756
„ 4 ...	57·0	70·2	43·9	30·264	30·326	30·212	0·344	0·425	0·294	0·740
„ 5 ...	59·5	74·5	45·7	30·090	30·202	29·986	0·372	0·455	0·282	0·731
„ 6 ...	59·2	71·8	50·3	30·000	30·033	29·943	0·390	0·443	0·303	0·775
„ 7 ...	69·1	82·9	48·2	29·947	30·018	29·867	0·434	0·515	0·336	0·610
October 8 ...	65·5	74·2	55·7	29·839	29·880	29·781	0·482	0·561	0·432	0·768
„ 9 ...	54·8	61·5	49·9	29·902	29·955	29·862	0·336	0·429	0·270	0·780
„ 10 ...	54·2	60·9	47·5	29·888	29·935	29·837	0·312	0·359	0·233	0·741
„ 11 ...	54·5	61·5	50·4	29·862	29·888	29·827	0·362	0·394	0·336	0·852
„ 12 ...	54·0	62·2	46·8	29·911	29·987	29·856	0·309	0·361	0·260	0·739
October 13 ...	57·3	70·9	41·5	29·946	29·984	29·898	0·329	0·381	0·261	0·700
„ 14 ...	58·7	68·9	49·7	29·980	30·053	29·923	0·355	0·407	0·321	0·719
„ 15 ...	68·1	83·1	49·7	29·752	29·915	29·593	0·313	0·369	0·272	0·456
„ 16 ...	65·3	80·5	50·8	29·533	29·649	29·457	0·311	0·464	0·201	0·498
„ 17 ...	54·1	64·2	46·8	29·819	29·926	29·660	0·299	0·342	0·269	0·713
October 18 ...	63·4	76·7	45·1	29·637	29·897	29·319	0·247	0·288	0·199	0·423
„ 19 ...	52·2	62·4	44·1	29·463	29·579	29·342	0·263	0·351	0·185	0·673
„ 20 ...	45·1	52·6	39·3	29·870	30·159	29·590	0·240	0·287	0·212	0·797
„ 21 ...	50·1	57·1	39·3	30·240	30·329	29·850	0·284	0·321	0·234	0·785
„ 22 ...	52·8	60·6	46·6	30·344	30·387	30·310	0·314	0·362	0·280	0·785
October 23 ...	54·8	67·8	39·7	30·270	30·348	30·180	0·318	0·363	0·261	0·848
„ 24 ...	65·8	80·9	46·4	30·049	30·182	29·902	0·278	0·332	0·241	0·523
„ 25 ...	67·6	86·5	56·0	29·910	30·069	29·807	0·332	0·444	0·251	0·758
„ 26 ...	58·2	65·3	52·6	30·097	30·144	30·066	0·351	0·385	0·315	0·794
„ 27 ...	57·0	66·0	48·6	30·042	30·125	29·958	0·386	0·436	0·328	0·938
October 28 ...	57·6	64·6	54·0	29·751	29·932	29·725	0·425	0·490	0·366	0·895
„ 29 ...	54·1	64·2	51·5	29·892	29·975	29·818	0·329	0·383	0·275	0·914
„ 30 ...	53·7	58·9	49·6	30·009	30·049	29·951	0·280	0·311	0·247	0·753
„ 31 ...	55·2	63·5	48·4	29·955	30·045	29·825	0·315	0·350	0·272	0·803
November 1 ...	59·6	72·4	45·3	29·597	29·802	29·414	0·329	0·425	0·234	0·832
Means ...	57·8	68·68	47·47	29·937	30·036	29·832	0·332	0·394	0·275	0·737

MONTH OF OCTOBER, 1858.

Pressure of Dry Air.	Wind.						Temperature of Surface Soil.			Maximum Temperature of Black Bulb Therm.
	Direction.			Force.						
	Mean.	Extreme from	Extreme to	Mean.	Max.	Min.	Mean.	Max.	Min.	
Inches.	° ′						°	°	°	°
29·934	44 50	All round.		1·35	3·0	0·5	67·0	110·7	40·1	86·0
29·920	0 45	All round.		1·37	3·0	0·5	66·2	98·3	45·7	81·2
29·718	121 43	W.	N.W.	1·27	3·0	0·5	68·8	106·2	46·5	96·8
29·610	319 3	N.W.	S.E.	1·54	3·0	0·5	71·2	106·7	50·9	83·6
29·513	150 18	E. by S.	N.N.W.	1·31	2·0	0·5	74·1	113·6	47·4	96·6
29·357	155 30	S.W.	N.N.W.	2·5	5·0	1·0	63·7	75·6	54·2	76·3
29·566	305 3	N.W.	S.	3·0	4·0	2·0	58·0	73·0	47·6	62·8
29·576	4 6	S.W. by S.	E.S.E.	2·08	4·0	1·0	59·9	80·0	45·4	67·7
29·500	345 10	N.W.	S.E.	1·17	3·0	0·5	57·8	70·1	52·2	...
29·602	329 19	W. by N.	E.S.E.	1·46	3·0	0·0	62·8	82·2	49·2	76·3
29·617	115 3	N.E.	S.E.	1·15	2·0	0·5	65·5	90·0	46·5	83·6
29·625	296 28	N. by W.	S.E.	1·4	3·0	0·5	71·0	106·2	49·4	81·4
29·439	140 29	E.N.E.	N.	4·02	5·0	0·5	...	82·6	...	90·5
29·222	196 53	N.E. by N.	S.W.	3·88	7·0	1·0	63·1	82·8	47·4	85·6
29·520	262 27	N.N.W.	N.E.	2·92	5·0	1·0	55·2	78·5	43·9	...
29·390	171 20	N.E. by N.	N. by W.	4·96	8·0	1·0	66·1	93·0	44·3	86·6
29·200	264 22	N.E. by N.	S.W.	3·96	7·0	2·0	55·6	76·5	45·2	...
29·630	307 31	N.W.	S.	3·29	5·0	1·0	44·9	58·2	38·1	...
29·956	329 11	W. ½ N.	S. by E.	2·0	4·0	1·0	55·7	81·4	37·0	67·7
30·030	341 43	W. ½ N.	S.E.	1·92	3·0	1·0	60·6	88·0	45·9	68·0
29·952	345 26	All round.		1·4	3·0	0·5	66·4	105·8	39·2	81·3
29·771	155 31	E.	N. by W.	3·5	6·0	1·0	70·8	101·0	45·2	90·2
29·578	150 26	S.	N.N.W.	4·67	6·0	2·0	70·7	105·3	55·6	92·1
29·746	351 25	S.W. by W.	E.	1·9	3·0	1·0	66·6	97·7	49·8	72·1
29·656	344 10	N.N.W.	S.E. by S.	1·17	2·0	1·0	62·5	84·7	47·0	...
29·326	334 45	W. by S.	S.	1·88	5·0	0·5	62·4	84·4	53·6	...
29·563	342 44	S.W. by W.	S.S.E.	3·46	6·0	1·0	61·6	84·7	51·6	...
29·729	0 16	S.S.W.	S.E. by S.	3·75	5·0	2·0	58·8	75·6	49·2	...
29·640	20 59	N.W.	E.S.E.	1·56	4·0	0·5	63·9	100·6	47·8	71·0
29·268	165 47	All round.		1·77	4·0	0·5	59·3	76·1	44·8	75·0
29·605	...	...	...	2·39	4·2	0·9	63·1	88·98	46·9	...

MONTH OF OCTOBER, 1858—*continued.*

DAY OF MONTH.	Amount of Cloud. (0—10.)			General Form of Cloud.	Electric Tension.			Ozone.		Hours of			
					Positive Mean	No. of Registrations.							
	Mean.	Max.	Min.			Negative.	0.	Day.	Night.	Fog.	Dew.	Hail.	Rain.
1858.													
October 3 ...	0·40	2·0	0·0	Cum. and Cir. Cu.	3·74	0	1	2·0	4·0	3·0	7·0	0·0	0·0
„ 4 ...	0·00	0·0	0·0	0	2·97	0	1	2·0	3·0	1·0	9·0	0·0	0·0
„ 5 ...	0·52	2·0	0·0	Cir. Cu. and Cu. Str.	2·88	2	3	...	4·0	0·0	7·0	0·0	0·0
„ 6 ...	2·71	9·5	0·0	Cum. and Cir. Cu.	2·88	0	1	1·0	3·0	0·0	5·0	0·0	0·0
„ 7 ...	3·69	10·0	0·0	Cu. Cir. Cu. and Cir. Str.	3·07	1	6	0·0	3·0	0·0	6·0	0·0	0·0
October 8 ...	8·69	10·0	5·0	Cu. Str. and Nimb.	1·71	2	6	...	1·0	0·0	0·0	0·0	1·4
„ 9 ...	8·75	10·0	2 0	Cu Str. and Nimb.	2·04	0	0	...	5·0	0·0	0·0	0·0	0·5
„ 10 ...	7·29	10·0	0·5	Cu. Str. and Cir. Cu.	3·66	0	0	1·0	2·0	0·0	0·0	0·0	0·0
„ 11 ...	7·81	10·0	0·0	Nimbus and Cir. Cu.	3·06	0	1	4·0	6·0	0·0	1·5	0·0	1·0
„ 12 ...	3·65	10·0	0·0	Cu. Str. Nimb. & Cir. Str.	2·60	0	3	5·0	6·0	0·0	2·0	0·0	0·0
October 13 ...	0·88	6·0	0·0	Cir. Cu. and Cu. Str.	3·47	0	1	0·0	2·0	0·0	2·5	0·0	0·0
„ 14 ...	3·2	10·0	0·0	Cir. Str. and Cir. Cu.	3·28	2	2	...	4·0	0·0	5·0	0·0	0·0
„ 15 ...	5·75	10·0	0·0	Cum. Str. Cir. Str.	2·06	9	3	0·0	3·0	0·0	2·0	0·0	0·0
„ 16 ...	8·4	10·0	1·0	Cum. Str. & Nimb.	1·59	11	4	4·0	1·0	0·0	0·0	0·0	3·6
„ 17 ...	5·5	9·5	0·0	Cu. Str. and Cir. Cu.	4·13	2	1	1·0	5·0	0·0	1·0	0·0	0·8
October 18 ...	5·79	9·5	2·0	Cir. Str. and Cu. Str.	3·41	10	0	1·0	3·0	0·0	2·3	0·0	0·0
„ 19 ...	9·80	10·0	6·0	Cir. Cu. and Nimb.	2·58	1	4	2·0	7·0	0·0	0·0	0·0	1·0
„ 20 ...	5·67	10·0	1·0	Cir. Cu. and Nimb.	3·80	3	0	9·0	4·0	0·0	0·0	0·05	5·7
„ 21 ...	7·77	10·0	2·0	Cir. Cu. and Nimb.	3·39	1	1	7·0	7·0	0·0	0·0	0·0	1·5
„ 22 ...	5·25	10·0	1·0	Cu. Str. Nimb. & Cir. Cu.	4·82	0	0	4·0	7·0	0·0	0·0	0·0	0·4
October 23 ...	1·48	6·0	0·0	Cir. Cu. and Cu. Str.	4·08	0	5	1·0	3·0	0·0	8·0	0·0	0·0
„ 24 ...	3·19	7·0	0·0	Stratus Cir. Str. & Cu. Str.	3·03	5	1	0·0	1·0	0·0	1·0	0·0	0·0
„ 25 ...	8·96	10·0	3·0	Cir. Str. and Nimb.	2·35	10	3	3·0	2·0	0·0	0·0	0·0	1·05
„ 26 ...	6·79	10·0	2·0	Cir. Str. Cu. Str. & Nimb.	3·77	0	0	3·0	4·0	0·0	0·0	0·0	0·0
„ 27 ...	8·37	10·0	2·0	Nimb. and Cir. Str.	3·68	0	0	3·5	4·0	0·0	0·0	0·0	0·1
October 28 ...	8·67	10·0	2·0	Nimb. Cir. Str. Cu Str.	2·67	0	0	1·0	2·0	0·0	0·0	0·0	8·3
„ 29 ...	9·54	10·0	7·0	Nimb. & Cu. Str.	1·87	0	3	2·0	4·0	0·0	0·0	0·0	2·3
„ 30 ...	9·99	10·0	9·5	Nimb. & Cu. Str.	1·87	0	8	3·5	4·0	0·0	0·0	0·0	0·6
„ 31 ...	5·44	10·0	0·0	Nimb. Cir. Str. Cu. Str.	1·92	0	3	2·5	4·0	0·0	1·5	0·0	0·1
November 1 ...	7·96	10·0	0·5	Nimb. Cir. Cu. & Cu. Str.	1·41	6	7	1·0	0·5	0·0	5·0	0·0	0·65
Means ...	5·73	8·72	1·55	...	2·93	...	...	2·44	3·62	...	...	...	..
Sums ...	...	...	...	...	...	65	68	...	...	4·0	65·8	0·05	29·0

MONTH OF OCTOBER, 1858—*continued.*

Amount of Rain.	REMARKS.
Inches.	
0·000	Weather very fine and clear. Dew (mid to 4 a.m.) (10 and 11 p.m.) Fog (5 to 7 a.m.) Zodiacal light (7 p.m.)
0·000	Weather very fine and clear. Dew (mid. to 5 a.m.) (9 to 11 p.m.) Dry fog (9 a.m.), very dense over the bay. Zodiacal light (8 p.m.)
0·000	Weather very fine and clear. Dew (mid. to 4 a.m.) (10 and 11 p.m.) Dense fog over the bay all the morning.
0·000	Fine and clear, except (4 to 6 a.m., and 7 p.m.) Dew (mid. and 2 to 4 a.m.) (10 and 11 p.m.) Zodiacal light (8 p.m) Horizon hazy towards North.
0·000	Fine (mid. to 3 p.m.) Veil over sky (4 to 11 p.m.) Dew (mid. to 5 a.m.) Aurora Aust. (1·15 to 3·30 a.m.) ⊙ Halo (4 p.m.)
0·037	Cloudy. Rain (7 and 8 a.m.) (2, 6, and 7 p.m.) Squally, with clouds of dust, in morning. Thunder storm (2 p.m.) with heavy rain.
0·009	Very cloudy. A little misty rain (5 p.m.) Wind light and unsteady.
0·000	Rather cloudy (after 2 a.m.) Horizon rather hazy (7 to 9 a.m.)
0·004	Very cloudy (mid. to 3 p.m., and 10 and 11 p.m.) Fine (4 to 9 p.m.) Rain (2, 3, 8, and 10 a.m.) (11 p.m.) Dew (9 and 10 p.m.) Donati's comet first seen here (6·45 p.m.)
0·000	Fine day. Dew (2 to 4 a.m.) Lightning towards East (8 p.m.)
0·000	Fine day, sky very clear. Dew (3 to 5 a.m.) ☾ Halo (9 p.m.) Fog over the bay (at 7 and 8 a.m.)
0·000	Sky clear (mid. to 3 a.m.) and (11 a.m. to 11 p.m.), totally clouded (4 to 9 a.m.) Several small whirlwinds (2 p.m.) Dew (1 to 3 a.m.) and (9 to 11 p.m.)
0·000	Fine (mid. to 5 a.m.) and (8 to 11 p.m.) Dew (mid. and 1 a.m.) Hot wind and clouds of dust (6 a.m. to noon.) ☾ Corona (7 and 8 p.m.)
0·116	Very cloudy. Rain (2 to 7 p.m.) Sultry night. Hot wind and clouds of dust (4 to 11 a.m.) Wind shifted to S. (12·20)
0·048	Cold, squally, and rather cloudy. Rain (8 to 10 a.m.) Dew (11 p.m.) Foggy in the evening.
0·000	Rather cloudy. Dew (mid. to 2 a.m.) ☾ Halo (mid.) Corona (8 to 10 p.m.) Windtrees and clouds of dust. Squally (until 5 p.m.)
0·015	Very cloudy. Wind squally and unsteady. Rain (4, 6 to 8, and 10 a.m.) ☾ Halo (10 p.m.)
0·446	Cloudy (mid. to 1 p.m.) Fine (2 to 11 p.m.) Rain (6 a.m. to 1 p.m.) Hail (1 p.m.) Squally. ☾ Corona (3 and 4 a.m.)
0·013	Very cloudy (mid. to 8 a.m.) and (3 to 11 p.m.) Rain (2 to 4, and 7 a.m.) (10 p.m.)
0·008	Very cloudy (mid. to 9 a.m.) Fine (9 a.m. to 11 p.m.) Rain (6 and 7 a.m.) Windtrees in the afternoon.
0·000	Fine clear day. Dew (1 to 5 a.m.) and (9 to 11 p.m.) ☾ Halo (1 and 3 a.m.) Corona (3 a.m.) Horizon foggy. Wind squally.
0·000	Fine clear day. Dew (mid.) ☾ Corona (mid.) Horizon very clear in morning. Clouds of dust (11 a.m.) Veil (11 p.m.)
0·032	Very cloudy. Rain (4 p.m.) Very squally (4 a.m.) Beautiful windtrees all the morning. Hail and lightning in S.E. (3·10 p.m.)
0·001	Very cloudy (mid to 10 a.m.) Veil and windtrees after noon. ⊙ Halo (3 and 5 p.m.) Horizon dull and hazy.
0·000	Fine (mid. to 5 a.m.) Densely clouded (6 a.m. to 11 p.m.) Rain (9 p.m.) ☾ Halo (mid., 1 and 4 a.m.) Horizon hazy.
0·044	Very cloudy (mid. to 3 p.m., and 9 to 11 p.m.) Rain (mid., 1 to 7 a.m., 9 to 11 a.m.) ⊙ Halo (4 p.m.)
0·009	Dull and overcast. Rain (3 to 6, and 9 a.m.) ⊙ Halo (1 p.m.) Wind unsteady (4 to 6 p.m.)
0·002	Dull and overcast. Rain (3, 4, 6, and 8 a.m.) Squally. Horizon dim and hazy.
0·000	Dull and overcast (mid. to 11 a.m.) Fine (noon to 11 p.m.) Rain (mid.) Dew (10 and 11 p.m.) Veil (10 p.m.)
0·000	Fine (mid. to 5 a.m.) and (11 p.m.) Dew (mid. to 4 a.m.) Rain (6, 10, and 11 p.m.) Dull and squally. Wind unsteady.
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0·784	

39. MONTH OF NOVEMBER, 1858.

DAY OF MONTH.	Temperature of Air.			Pressure of Air.			Pressure of Vapor.			Relative Humidity.
	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.
1858.	°	°	°	Inches.	Inches.	Inches.	Inch.	Inch.	Inch.	(0—1.)
November 2 ...	51·9	56·9	47·9	29·755	30·005	29·477	0·288	0·428	0·231	0·746
„ 3 ...	52·4	59·1	45·9	30·038	30·078	30·001	0·276	0·301	0·252	0·701
„ 4 ...	59·8	81·6	39·5	29·945	30·055	29·846	0·322	0·408	0·247	0·621
„ 5 ...	58·7	67·8	50·2	29·957	30·028	29·858	0·365	0·426	0·310	0·739
„ 6 ...	62·3	73·6	53·5	29·801	30·021	29·528	0·436	0·559	0·377	0·776
November 7 ...	59·5	66·0	52·4	29·747	29·944	29·512	0·366	0·470	0·278	0·719
„ 8 ...	55·1	64·2	46·2	30·000	30·074	29·919	0·318	0·385	0·273	0·733
„ 9 ...	55·2	63·5	48·6	30·065	30·097	30·019	0·334	0·388	0·310	0·766
„ 10 ...	61·2	71·5	44·8	29·994	30·080	29·903	0·398	0·461	0·312	0·735
„ 11 ...	67·5	82·9	54·6	29·856	29·923	29·753	0·415	0·522	0·340	0·617
November 12 ...	63·2	71·8	56·9	29·826	29·897	29·789	0·489	0·534	0·419	0·843
„ 13 ...	60·3	69·8	54·6	29·751	29·815	29·679	0·474	0·561	0·418	0·905
„ 14 ...	62·3	69·8	56·4	29·684	29·713	29·651	0·469	0·523	0·433	0·835
„ 15 ...	58·5	65·8	53·1	29·749	29·834	29·686	0·423	0·461	0·392	0·861
„ 16 ...	62·6	72·7	52·4	29·740	29·827	29·599	0·474	0·537	0·403	0·835
November 17 ...	65·5	73·3	54·4	29·627	29·803	29·506	0·391	0·478	0·287	0·623
„ 18 ...	60·9	72·2	50·6	29·774	29 819	29·708	0·373	0·446	0·313	0·697
„ 19 ...	60·9	71·8	49·5	29·835	29·880	29·800	0·358	0·413	0·302	0·669
„ 20 ...	66·8	86·0	49·5	29·873	29·997	29·815	0·358	0·491	0·270	0·545
„ 21 ...	78·1	98·7	52·6	29·944	30·014	29·870	0·353	0·429	0·296	0·452
November 22 ...	85·2	103·2	66·0	29·839	29·917	29·740	0·379	0·536	0·311	0·313
„ 23 ...	73·2	97·8	61·1	29·750	29·793	29·672	0·491	0·573	0·363	0·600
„ 24 ...	62·3	76·9	54·9	29·874	30·031	29·782	0·387	0·488	0·296	0·689
„ 25 ...	57·1	64·9	49·7	30·155	30·232	30·044	0·290	0·372	0·228	0·621
„ 26 ...	59·4	72·4	45·7	30·109	30·225	30·006	0·365	0·468	0·294	0·720
November 27 ...	66·2	81·6	51·1	29·928	30·020	29·834	0·443	0·543	0·367	0·688
„ 28 ...	67·9	76·5	63·1	29·782	29·853	29·666	0·478	0·577	0·398	0·701
„ 29 ...	66·8	75·1	61·5	29·523	29·637	29·446	0·571	0·660	0·515	0·869
„ 30 ...	66·0	78·0	59·8	29·465	29·546	29·417	0·531	0·597	0·482	0·831
December 1 ...	65·7	76·7	58·2	29·610	29·684	29·543	0·484	0·547	0·406	0·765
Means ...	63·08	74·74	52·82	29·833	29·928	29·736	0·403	0·486	0·337	0·707

MONTH OF NOVEMBER, 1858.

Pressure of Dry Air.	Wind. Direction. Mean.	Extreme from	Extreme to	Force. Mean.	Max.	Min.	Temperature of Surface Soil. Mean.	Max.	Min.	Maximum Temperature of Black Bulb Therm.
Inches.	° ′						°	°	°	°
29·467	342 24	W.	E.S.E.	4·46	5·0	2·0	56·2	77·6	45·4	...
29·762	21 4	S.W.	E.	2·63	4·0	2·0	61·2	91·3	44·8	68·9
29·623	135 10	All round.		2·00	4·0	1·0	70·5	112·1	38·1	92·3
29·592	355 4	N.E.	S. by E.	2·73	6·0	0·5	67·1	97·9	47·2	85·1
29·365	198 17	All round.		3·00	7·0	1·0	68·8	102·6	52·9	75·9
29·381	244 50	N. by E.	S.E.	4·71	6·0	2·0	61·0	82·2	50·7	...
29·682	340 3	W.	S.E.	3·29	5·0	1·0	62·5	89·1	47·0	68·0
29·731	19 30	S.S.W.	E. by S.	2·50	4·0	1·0	62·7	89·1	49·2	74·8
29·596	44 55	S. ½ W.	N.W. by N.	1·92	4·0	1·0	72·7	108·9	42·5	82·6
29·441	164 54	S.E. by E.	N.W. by W.	3·35	6·0	1·0	72·1	106·7	51·8	89·4
29·337	346 28	S.W.	N. by E.	2·13	5·0	0·5	66·4	95·7	54·2	79·3
29·277	281 50	All round.		1·46	5·0	1·0	60·3	77·6	51·6	...
29·215	332 10	All round.		1·17	3·0	0·0	60·5	104·6	52·2	...
29·326	303 28	W. by S.	S.W. by S.	2·92	5·0	1·0	66·9	101·3	49·6	70·3
29·266	353 35	W. by N.	N.N.E.	1·42	4·0	0·5	73·6	113·4	52·0	83·3
29·236	320 21	E.N.E.	S.	3·71	6·0	1·0	70·4	98·8	53·8	74·8
29·401	312 53	N.W. by W.	S.E.	1·80	3·0	1·0	71·7	117·0	47·6	89·2
29·477	324 24	N.E.	S.E.	1·48	3·0	0·5	74·7	124·7	46·5	83·5
29·515	242 23	N.E.	S.E.	2·17	4·0	1·0	76·8	120·2	47·4	110·5
29·591	171 49	E.S.E.	N.W. by N.	3·23	6·0	0·5	83·5	124·7	49·8	108·3
29·460	180 12	N.E.	S.E. by S.	3·67	6·0	1·0	89·8	125·8	64·6	108·7
29·259	182 11	All round.		2·98	8·0	0·5	79·6	124·9	58·2	104·0
29·487	327 49	N.W. by W.	S. by E.	2·56	5·0	0·5	66·9	111·4	53·6	88·3
29·865	1 27	S.W.	S.E.	4·29	7·0	2·0	66·3	99·0	46·7	70·3
29·744	2 32	All round.		1·81	3·0	0·5	75·3	127·4	41·9	85·8
29·485	53 2	All round.		1·37	3·0	0·0	76·7	124·0	48·3	93·2
29·304	134 9	S.E. by E.	N.N.W.	1·65	4·0	0·0	69·3	87·7	60·4	...
28·952	129 26	E. by S.	S.W.	1·92	4·0	1·0	64·0	75·4	58·4	...
28·934	239 21	N.N.E.	S.	2·25	4·0	1·0	64·4	80·7	56·4	83·5
29·126	282 32	All round.		1·63	4·0	0·0	69·4	100·4	55·8	90·3
29·430	...	...	...	2·54	4·8	0·9	69·4	103·07	50·62	...

MONTH OF NOVEMBER, 1858—*continued.*

DAY OF MONTH.	Amount of Cloud. (0—10.)			General Form of Cloud.	Electric Tension.			Ozone.		Hours of			
					Positive	No. of Registrations.							
	Mean.	Max.	Min.		Mean.	Negative.	0.	Day.	Night.	Fog.	Dew.	Hail.	Rain.
1858.													
November 2 ...	6·27	10·0	0·5	Cir. Cu. & Nimb.	2·26	0	6	8·0	6·5	0·0	0·0	0·0	0·65
„ 3 ...	3·79	10·0	0·0	Nimb. Cum. St. & Cir. Cu.	2·54	0	3	3·0	6·0	0·0	0·0	0·0	0·3
„ 4 ...	0·68	6·0	0·0	Cir. Str. & Cu. Str.	3·39	3	2	1·5	5·0	0·0	4·0	0·0	0·0
„ 5 ...	6·79	9·0	3·0	Cir. Str.	2·54	0	3	3·0	0·5	0·0	0·0	0·0	0·0
„ 6 ...	8·37	10·0	5·0	Cu. Str. & Nimb.	2·24	1	4	3·5	4·0	0·0	0·0	0·0	1·1
November 7 ...	5·96	10·0	1·0	Nimb. Cu. Str. & Cir. St.	1·66	0	1	7·0	6·0	0·0	0·0	0·0	0·4
„ 8 ...	5·23	10·0	0·5	Cu. Str. & Nimb.	2·24	0	3	7·0	6·0	0·0	0·0	0·0	0·4
„ 9 ...	6·33	10·0	1·0	Cu. Str. Nimb. Cir. Cu.	3·31	0	3	5·0	5·0	0·0	0·0	0·0	0·0
„ 10 ...	2·31	9·5	0·0	Cir. Str. Cu. Str.	2·46	1	2	...	6·0	0·0	3·5	0·0	0·0
„ 11 ...	5·98	10·0	0·0	Cir. Cu., Cu. St., Nimb.	2·66	9	2	3·0	2·5	0·0	1·0	0·0	1·85
November 12 ...	7·95	10·0	1·0	Cu. Str. & Nimbi	3·56	0	1	3·0	4·0	0·0	0·0	0·0	0·7
„ 13 ...	7·81	10·0	1·0	Cir. Cu & Nimbus	3·90	3	0	3·0	7·0	0·0	6·0	0·0	6·0
„ 14 ...	7·0	10·0	1·0	Cir. Cu. & Nimbus	3·92	0	0	2·0	1·0	0·0	0·0	0·0	0·0
„ 15 ...	6·83	10·0	1·0	Cir. Cu. & Nimbus	1·62	0	4	...	8·0	0·0	4·1	0·0	0·3
„ 16 ...	7·15	10·0	0·5	Cir. Cu., Cu. Str., Nimbus	2·72	0	2	4·0	...	0·0	0·5	0·0	6·7
November 17 ...	7·19	10·0	3·0	Cir. Cu. & Nimbus	1·89	1	5	3·0	3·0	0·0	0·0	0·0	0·0
„ 18 ...	7·37	10·0	3·0	Cir. Cu., Cu. Str., Nimbus	1·39	0	8	3·0	6·0	0·0	0·0	0·0	1·0
„ 19 ...	2·87	6·0	0·0	Cir. Cu., Cu. Str., Nimbus	1·63	0	1	1·0	3·0	0·75	2·5	0·0	0·0
„ 20 ...	3·25	9·5	0·0	Cir. & Cir. Str.	1·92	1	6	2·0	3·0	0·0	3·7	0·0	0·0
„ 21 ...	2·17	4·0	0·0	Cir. Str. & Cir. Cu.	1·28	4	6	1·0	3·0	0·0	2·0	0·0	0·0
November 22 ...	2·46	8·0	1·0	Cir. Str. & Cu. Str.	1·46	5	8	0·5	1·0	0·0	0·0	0·0	0·0
„ 23 ...	3·52	10·0	0·0	Cir. Str., Cu. Str. Nimb.	1·95	6	5	2·5	...	0·0	2·0	0·0	0·4
„ 24 ...	8·71	10·0	4·0	Cu. Str. & Nimbus	1·79	3	4	3·0	6·0	0·0	0·0	0·0	2·2
„ 25 ...	3·23	10·0	0·0	Cu. Str., Cir. Cu., Nimb.	2·91	0	8	0·5	3·0	0·0	0·0	0·0	0·0
„ 26 ...	2·90	9·0	0·0	Cu. Str. & Cum.	3·90	0	1	1·0	2·0	0·0	1·5	0·0	0·0
November 27 ...	7·95	10·0	0·0	Cir. Cu. & Cir. Str.	3·06	3	2	0·0	4·0	0·0	4·0	0·0	0·0
„ 28 ...	9·94	10·0	9·5	Cu. Str. & Nimb.	1·59	2	7	0·5	0·0	0·0	0·0	0·0	6·66
„ 29 ...	9·67	10·0	8·0	Nimbus & Cum.	2·82	5	2	2·0	0·5	0·0	0·0	0·0	11·45
„ 30 ...	7·02	10·0	1·0	Nimbus, Cum., & Cu. Str.	1·05	1	6	5·0	8·0	0·0	2·7	0·0	7·3
December 1 ...	6·08	10·0	0·0	Nimbus Cir. Cu. & Cu. Str.	2·83	0	2	6·0	5·0	0·0	2·0	0·0	0·4
Means ...	5·76	9·37	1·5	...	2·42	...	...	3·0	4·11	...	...	...	...
Sums ...	...	...	...	...	...	48	107	...	...	0·75	39·5	0·0	47·81

MONTH OF NOVEMBER, 1858—*continued.*

Amount of Rain.	REMARKS.
Inches.	
0·191	Cloudy. Rain (7 to 9 a.m. and 9 p.m.) Very stormy all day.
0·000	Very cloudy (mid. to 8 a.m.) Fine and clear (9 a.m. to 11 p.m.) Rain (mid. and 2 a.m.) Wind unsteady.
0·000	Fine day. Dew (1 to 4 a.m.) Light winds. Veil clouds and windtrees after noon.
0·000	Rather cloudy. ⊙ Halo (9 and 10 a.m. and 5 p.m.) Cir. Str. veil and windtrees.
0·000	Very cloudy. Rain (6 and 8 p.m.) Dry fog on the horizon in the morning. Thunder storm (8 p.m.) with squalls of wind and heavy rain.
0·275	Rather cloudy. Rain (noon and 4 p.m.) Lightning in East until (2 a.m.) Wind squally and unsettled after noon.
0·003	Very cloudy (mid. to 10 a.m.) Fine after noon but horizon dull.
0·000	Cloudy (mid. to 3 p.m.) Wind rather unsteady. Fine evening. Sky exceedingly clear.
0·010	Fine day. Dew (1 to 4 a.m.) Horizon dim and misty. Wind light and variable.
0·115	Very fine (mid. to 5 a.m.) Hot wind and dust (8 a.m. to 6 p.m.) Heavy thunderstorm (6 p.m.) Rain (6, 7, 9, and 11 p.m.)
0·131	Densely overcast (mid. to 1 p.m.) Rain (mid., 1 a.m., and 1 p.m.) Wind very unsteady. Fine (2 to 11 p.m.) Lightning in N.W. during the evening.
0·579	Very cloudy. Dew (mid. to 4 a.m. and 11 p.m.) Rain (6 a.m. to noon). Lightning in S.W. (1 a.m.) Wind unsteady.
0·000	Overcast (mid. to noon). Quite calm all the morning. Fine afternoon.
0·000	Morning rather dull. Dew (mid. and 1 to 5 a.m.) Rain (4 and 5 p.m.) Wind unsteady. Densely clouded (4 to 11 p.m.)
0·051	Densely clouded (mid. to 10 a.m. and 9 to 11 p.m.) Dew (9 p.m.) Wind variable. Flashes of lightning in S.W. (11 p.m.)
0·000	Cloudy. Thunder and lightning in S.W. all the morning. Hot wind (2 to 7 a.m.) Clouds of dust (6 a.m. to 2 p.m.)
0·000	Cloudy. Rain (8 and 9 p.m.) Fine (11 a.m. to 4 p.m.) Wind very unsteady (4 and 5 p.m.)
0·017	Very fine. Dew (2 to 4 a.m.) Fog (3 and 4 a.m.) ☾ Corona (mid.) Halo (10 p.m.) Veil over sky.
0·000	Very fine. Dew (mid. and 1 to 5 a.m.) ☾ Halo (mid. and 1 a.m.) Corona (10 p.m.) ⊙ Halo (noon, 1, 5, and 6, p.m.)
0·000	Very fine. Dew (1 and 2 a.m.) Hot wind and dust (9 a.m. to noon). ⊙ Halo (11 p.m.)
0·000	Very fine and clear. Hot wind. Squalls and clouds of dust in morning. ⊙ Halo (10 a.m.)
0 000	Very fine (mid. to 4 p.m.) Cloudy (5 to 11 p.m.) Dew (2 and 3 a.m.) Rain (11 p.m.) Thunder and lightning (10 p.m.)
0·064	Very cloudy. Rain (mid. to 3 a.m., 5 to 7, and 11 a.m.) Hazy and squally in afternoon.
0·000	Fine day. Wind unsteady, sometimes squally.
0·000	Fine day. Dew (3 and 4 a.m.) ⊙ Halo (1 and 3 p.m.) Windtrees (noon).
0·000	Cloudy. Dew (1 to 4 a.m.) ☾ Corona (2 a.m.) Horizon hazy. Wind variable.
0·037	Densely overcast. Rain (11 a.m., 1 p.m. and 3 to 11 p.m.) Wind light but unsteady.
0·351	Densely overcast. Rain (mid. to 3, 5 to 11 a.m., 1, 2, 4, 6, and 8 to 11 p.m.) Thunder and lightning (1 to 11 p.m.)
0·857	Fine (mid. to 8 a.m.) Rain (mid. and 1 a.m., 3, 4, and 6 to 11 p.m.) Dew (2 to 5 a.m.) Thunder (3 p.m.) Lightning (8 p.m.)
0·200	Rather cloudy (mid. to 6 p.m.) Rain (1 a.m.) Dew (10 and 11 p.m.) Wind unsteady. Fine clear evening.
...	
2·881	

40. MONTH OF DECEMBER, 1858.

DAY OF MONTH.	TEMPERATURE OF AIR.			PRESSURE OF AIR.			PRESSURE OF VAPOR.			RELATIVE HUMIDITY.
	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.
1858.	°	°	°	Inches.	Inches.	Inches.	Inch.	Inch.	Inch.	(0—1.)
DECEMBER 2 ...	71·1	89·1	58·6	29·679	29·761	29·627	0·451	0·496	0·409	0·485
„ 3 ...	71·1	92·5	58·6	29·646	29·756	29·567	0·443	0·517	0·390	0·476
„ 4 ...	65·0	79·8	55·5	29·688	29·786	29·629	0·419	0·466	0·351	0·676
„ 5 ...	61·6	75·1	52·9	29·845	29·931	29·779	0·346	0·404	0·281	0·631
„ 6 ...	60·2	75·8	49·0	29·922	29·978	29·845	0·340	0·449	0·268	0·651
DECEMBER 7 ...	55·2	62·2	49·3	29·949	29·974	29·922	0·294	0·353	0·252	0·677
„ 8 ...	53·5	60·9	47·3	29·894	29·935	29·855	0·317	0·356	0·282	0·773
„ 9 ...	56·8	65·3	46·4	29·817	29·849	29·798	0·330	0·358	0·270	0·714
„ 10 ...	62·5	82·7	45·3	29·753	29·835	29·640	0·347	0·415	0·279	0·613
„ 11 ...	60·5	67·8	54·2	29·797	29·848	29·738	0·376	0·443	0·325	0·712
DECEMBER 12 ...	55·9	62·6	52·2	29·686	29·725	29·618	0·410	0·456	0·335	0·717
„ 13 ...	62·0	69·1	54·4	29·734	29·776	29·701	0·452	0·527	0·386	0·813
„ 14 ...	71·2	86·5	54·2	29·702	29·773	29·633	0·495	0·632	0·407	0·648
„ 15 ...	72·2	90·5	60·0	29·619	29·756	29·533	0·483	0·565	0·437	0·611
„ 16 ...	66·6	79·4	58·0	29·729	29·828	29·683	0·451	0·556	0·363	0·690
DECEMBER 17 ...	65·8	82·7	54·9	29·693	29·829	29·556	0·462	0·567	0·390	0·728
„ 18 ...	62·5	73·6	54·2	29·410	29·586	29·304	0·441	0·498	0·383	0·779
„ 19 ...	54·4	66·4	49·7	29·068	29·284	28·872	0·407	0·459	0·355	0·960
„ 20 ...	53·8	60·2	48·8	29·522	29·734	29·265	0·344	0·378	0·318	0·829
„ 21 ...	54·5	60·2	49·3	29·709	29·746	29·672	0·375	0·464	0·310	0·882
DECEMBER 22 ...	59·8	72·0	51·5	29·763	29·795	29·733	0·376	0·416	0·322	0·732
„ 23 ...	61·8	72·0	50·4	29·783	29·863	29·738	0·431	0·503	0·380	0·781
„ 24 ...	65·3	76·5	53·7	29·816	29·879	29·739	0·506	0·616	0·423	0·814
„ 25 ...	69·3	78·5	60·9	29·654	29·752	29·535	0·584	0·650	0·502	0·816
„ 26 ...	75·6	87·1	64·6	29·423	29·540	29·306	0·528	0·592	0·462	0·597
DECEMBER 27 ...	60·3	69·3	54·2	29·628	29·813	29·442	0·356	0·451	0·305	0·680
„ 28 ...	60·1	71·3	52·6	29·975	30·103	29·815	0·358	0·395	0·322	0·689
„ 29 ...	63·5	76·2	48·8	30·096	30·148	30·053	0·425	0·522	0·323	0·732
„ 30 ...	72·3	87·1	56·3	30·084	30·153	30·024	0·499	0·649	0·370	0·629
„ 31 ...	79·3	94·3	62·0	29·970	30·046	29·886	0·502	0·579	0·418	0·504
MEANS ...	63·46	75·56	53·59	29·735	29·826	29·650	0·418	0·491	0·354	0·701

MONTH OF DECEMBER, 1858.

Pressure of Dry Air.	Wind. Direction. Mean.	Extreme from	Extreme to	Force. Mean.	Max.	Min.	Temperature of Surface Soil. Mean.	Max.	Min.	Maximum Temperature of Black Bulb Therm.
Inches.	° ′						°	°	°	°
29·228	168 40	N.E. by E.	S.E. by E.	4·0	7·0	1·0	76·9	113·4	53·6	97·3
29·203	179 52	All round.		3·96	7·0	1·0	71·3	101·0	54·0	94·6
29·269	343 15	E.	S.E. by E.	2·33	6·0	0·0	76·3	120·2	51·4	94·6
29·499	334 24	N.N.W.	E.S.E.	2·73	6·0	0·5	72·2	111·6	49·2	...
29·582	334 25	N.W.	N.E.	2·04	5·0	1·0	76·2	125·1	49·2	90·3
29·655	339 43	W.	N.E.	3·92	6·0	1·0	63·1	95·5	47·2	...
29·577	352 8	N.W.	E.S.E.	2·08	4·0	0·0	57·1	75·8	45·9	69·4
29·487	345 6	E.S.E.	S.E.	1·58	4·0	0·5	...	...	41·9	76·1
29·406	313 36	All round.		2·31	7·0	0·5	67·5	104·4	43·0	100·4
29·421	352 3	W.S.W.	E. by N.	2·4	5·0	1·0	67·2	92·8	54·0	...
29·276	72 37	S.	N.	1·6	4·0	1·0	54·1	65·9	50·7	...
29·282	326 17	N.W. by W.	S.E. by E.	2·29	4·0	1·0	64·2	85·5	49·2	79·9
29·207	115 15	S.W.	N.W.	1·56	4·0	0·5	76·6	110·0	50·9	102·9
29·136	58 27	N.E. by E.	S. ½ E.	4·04	7·0	1·0	75·8	105·1	58·6	101·3
29·278	7 8	S.W.	N.W. by W.	1·58	5·0	0·5	77·2	113·6	55·8	89·2
29·231	14 16	W.	N.N.E.	1·87	7·0	0·0	76·5	115·7	52·0	95·0
28·969	209 50	N. by W.	S.E.	2·31	6·0	0·5	62·2	81·4	52·2	...
28·661	285 21	E.S.E.	S.W.	2·81	10·0	0·0	54·1	76·5	47·0	...
29·178	288 30	W. by N.	S.S.W.	4·83	7·0	1·0	51·8	66·8	45·0	...
29·334	225 52	N.	S.W. by S.	2·04	4·0	0·0	50·5	57·8	44·5	...
29·387	299 59	N.W.	S.E.	1·25	3·0	0·5	60·1	79·8	47·0	...
29·352	6 7	S.W.	N.	1·69	4·0	0·0	68·6	97·7	46·7	88·9
29·310	3 8	W. by N.	E.	1·15	3·0	0·5	71·4	109·4	49·2	88·9
29·070	70 2	S. ½ E.	N.N.W.	1·42	5·0	0·5	68·7	88·9	53·6	...
28·895	189 0	N.E. ½ E.	W. by N.	2·42	6·0	0·5	80·2	110·0	60·0	99·1
29·272	271 21	N.W. by N.	W.S.W.	3·42	5·0	2·0	60·5	82·5	50·9	76·8
29·617	313 17	N.W.	S.E. by E.	1·83	4·0	1·0	66·4	104·4	47·0	86·9
29·671	2 37	S.W.	N.W. by N.	1·12	3·0	0·0	73·6	108·9	44·8	92·3
29·585	20 29	N. by W.	E. by N.	1·33	3·0	0·5	82·2	122·4	52·5	94·8
29·468	149 2	E.	N.W. by N.	1·88	4·0	0·5	86·4	126·9	58·0	106·7
29·317	...	...	...	2·32	5·17	0·6	68·58	98·24	50·17	...

MONTH OF DECEMBER, 1858—*continued.*

DAY OF MONTH.	Amount of Cloud. (0—10.)			General Form of Cloud.	Electric Tension.			Ozone.		Hours of			
					Positive Mean.	No. of Registrations.							
	Mean.	Max.	Min.			Negative.	0.	Day.	Night.	Fog.	Dew.	Hail.	Rain.
1858.													
December 2 ...	2·46	8·0	0·0	Cir. Str. & Cir. Cum.	3·66	7	1	3·0	3·0	0·0	0·5	0·0	1·3
„ 3 ...	5·83	10·0	2·0	Cir. Cum., Cum. Str.	3·11	8	1	3·0	5·0	0·0	0·0	0·0	2·0
„ 4 ...	4·81	10·0	1·0	Cir. Cum.	2·97	4	4	2·0	2·0	0·0	2·7	0·0	0·5
„ 5 ...	3·83	9·5	0·0	Cir. Cum. & Cum. Str.	2·92	0	1	4·5	3·0	0·0	0·0	0·0	0·0
„ 6 ...	4·65	10·0	0·0	Cir. Cum.	2·11	1	3	4·0	5·0	0·0	0·0	0·0	1·1
December 7 ...	6·52	10·0	2·0	Cir. Cum., Cum. Strat.	2·43	3	3	8·0	8·0	0·0	0·0	0·0	1·75
„ 8 ...	6·87	10·0	2·0	Cir. Cum., Cum. Str.	3·56	4	2	7·0	5·0	0·0	0·0	0·1	8·3
„ 9 ...	2·67	9·0	0·0	Cum. & Cu. Str.	3·74	0	1	1·0	3·0	0·0	2·0	0·0	0·0
„ 10 ...	4·21	9·5	0·0	Cir. Str. & Cir. Cum.	2·83	1	5	0·3	1·0	0·0	5·55	0·0	0·0
„ 11 ...	9·35	10·0	6·0	Cir. Str. & Cir. Cum.	3·98	0	0	4·5	5·0	0·0	0·0	0·0	0·25
December 12 ...	9·25	10·0	2·0	Nimbus	3·27	7	2	6·0	3·0	0·0	0·0	0·0	11·65
„ 13 ...	4·29	10·0	0·0	Cir. Cum.	4·56	0	0	3·0	3·0	0·0	3·4	0·0	0·0
„ 14 ...	1·61	9·0	0·0	Cir. Cum. & Cu. Str.	3·07	0	2	1·0	3·0	0·0	5·0	0·0	0·0
„ 15 ...	4·21	9·5	0·0	Cir. Cum.	3·03	6	1	2·0	1·0	0·0	0·0	0·0	0·0
„ 16 ...	2·52	10·0	0·0	Cir. Cum.	3·72	1	0	0·5	4·0	0·0	1·5	0·0	0·0
December 17 ...	2·13	8·0	0·0	Cir. Str. & Cu. Str.	3·50	2	5	1·0	0·5	0·0	2·0	0·0	0·1
„ 18 ...	9·52	10·0	5·0	Cu. Str. & Nimb.	2·62	2	4	3·0	1·0	0·0	2·0	0·0	6·5
„ 19 ...	9·83	10·0	8·0	Nimb.	3·06	8	0	...	6·0	0·0	0·0	0·2	15·7
„ 20 ...	8·94	10·0	5·0	Cir. Cum. & Nimb.	4·14	8	1	5·0	10·0	0·0	0·0	0·0	7·9
„ 21 ...	9·58	10·0	6·0	Cir. Str. & Nimb.	2·71	2	5	5·0	4·0	0·0	0·0	0·0	10·7
December 22 ...	5·79	9·5	0·0	Cir. Cum., Cu. Strat.	2·46	0	1	1·0	3·0	0·0	1·0	0·0	0·0
„ 23 ...	1·54	4·0	0·0	Cir. Strat.	3·70	0	5	1·5	0·2	0·0	6·4	0·0	0·0
„ 24 ...	4·12	10·0	0·0	Cir. Cum., Cum. Strat.	3·75	0	0	1·0	1·5	3·0	4·0	0·0	0·0
„ 25 ...	9·06	10·0	6·0	Cir. Strat., Nimb.	1·98	0	9	1·0	1·0	0·0	1·0	0·0	2·0
„ 26 ...	6·25	10·0	0·0	Cir. Cum.	0·53	1	7	2·0	2·5	0·0	0·0	0·0	0·3
December 27 ...	7·56	10·0	1·0	Cir. Cum. & Cu. Strat.	3·27	1	0	2·0	6·0	0·0	0·0	0·0	2·4
„ 28 ...	4·04	10·0	0·0	Cir. Cum. & Cum.	3·47	0	0	1·0	2·5	0·0	0·0	0·0	0·6
„ 29 ...	0·08	1·0	0·0	Cir. Cum & Cum.	4·22	0	0	0·5	0·5	0·0	2·0	0·0	0·0
„ 30 ...	0·42	2·0	0·0	Cir. Cum. & Cum.	3·44	2	2	1·0	1·0	0·0	5·0	0·0	0·0
„ 31 ...	0·65	3·0	0·0	Cu. Strat., Veil	1·70	1	5	0·5	1·0	0·0	1·0	0·0	0·0
Means ...	5·08	8·73	1·53	...	3·12	...	...	2·60	3·16	...	...	...	...
Sums	...	...	...	...	...	69	70	...	...	3·0	45·05	0·3	73·05

MONTH OF DECEMBER, 1858—*continued.*

Amount of Rain.	REMARKS.
Inches.	
0·000	Very fine and clear (mid. to 2 p.m.) Dew (mid.) Cloudy (3 to 11 p.m.) Rain (6, 10, and 11 p.m.) Lightning (9 and 10 p.m.)
0·023	Cloudy. Rain (1 a.m., 4 p m., and 9 to 11 p.m.) Lightning (mid. to 2 a.m.) Peculiar thunderstorm after (9 p.m.) Lightning very frequent but very little thunder.
0·041	Lightning (mid. to 1 a.m.) with rain. Fine (2 a.m. to 7 p.m.) Dew (2 a.m. to 5 a.m.) Heavy squall from S. with clouds of dust (4 p.m.)
0·000	Fine (mid. to 9 a.m. and 4 to 8 p.m.) Horizon hazy. Very cloudy (10 and 11 p.m.)
0·000	Fine (mid. to 1 p.m.) A few small whirlwinds (11 a.m.) Squally and very cloudy (2 to 11 p.m.) Rain (6 and 8 to 11 p.m.)
0·019	Cloudy (mid. to 11 a.m. and 7 to 11 p.m.) Rain (mid. and 10, 11 p.m.) Hail (10 p.m.)
1·015	Very cloudy (mid. to 9 a.m. and 7 to 11 p.m.) Heavy rain (mid. to 9 a.m.) Hail (5 a.m.) Wind unsteady (2 to 5 p.m.)
0·000	Fine (3 a.m. to 11 p.m.) Dew (4 and 5 a.m.) Wind unsteady in the morning.
0·000	Fine (mid. to 8 a m. and 6 to 9 p.m.) Dew (mid. to 5 a.m.) Column of dust (2 p.m.) Calm (5 p.m.) Heavy squall with clouds of dust (5·40 p.m.)
0·023	Very cloudy. Rain (7 a.m.) Veil over sky. ⊙ Halo (noon and 3 p.m.) Veil very dense in the evening.
1·279	Densely overcast except at (5 and 6 p.m.) Heavy rain (2 a.m. to 3 p.m.) Wind squally (10 p.m.)
0·000	Cloudy (mid. to 10 a.m.) Dew (4 and 5 a.m. and 9 to 11 p.m.) Fine (11 a.m. to 11 p.m.) ⊙ Halo (2 p.m.)
0·002	Fine day. Dew (mid. to 4 a.m.) Windtrees (8 a.m.) Horizon hazy (6 p.m.)
0·000	Fine (mid. to 2 p.m. and 8 to 11 p.m.) Very squally with clouds of dust (3 p.m.)
0·000	Fine day. Dew (1 and 2 a.m.) Lightning in N.E. (mid. to 2 a.m.) Horizon hazy.
0·000	Fine day. Dew (3 and 4 a.m.) Rain (11 p.m.) ⊙ Halo (1 p.m.) ☾ Halo (10 p.m.)
0·033	Very cloudy. Dew (mid. and 1 a.m.) Rain (10 a.m., and 4 to 11 p.m.) Dust storm (1 p.m.)
1·465	Very cloudy. Rain (mid. to 2 a.m. and 6 a.m. to 11 p.m.) Thunderstorm in N.W. (2 p.m.) Very stormy (5 to 11 p.m.)
1·013	Very cloudy. Rain (mid to 1 p.m., 3 to 6 and 8 p.m.) Stormy.
0·403	Very cloudy. Rain (7 a m. to 10 p.m.) Veil and ☾ halo (1 a.m.) Wind unsteady (9 a.m.)
0·135	Cloud (mid. to 2 p.m.) Fine (3 to 11 p.m.) Dew (11 p.m.) ☾ Halo (11 p.m.)
0·000	Fine day. Dew (mid. to 5 a.m. and 11 p.m.) Veil and ☾ halo (mid. to 4 a.m.) Aurora Aust. (9 p.m.) in S.W. by S.
0·000	Fine day. Dew (mid. to 3 a.m.) Fog (8 to 11 a.m.) ☾ Corona (mid.) ⊙ Halo (3 p.m.) Windtrees (2 p.m.)
0·031	Cloudy. Dew (2 and 3 a.m.) Rain (10 a.m. to noon.) ☾ Halo (mid. and 1 a.m.) ⊙ Halo (3 p.m.) Aurora (1 a.m.) Thunder (6 a m.)
0·000	Rather cloudy. Rain (11 p.m.) ☾ Halo (1 a.m.) Thunderstorm (10·30 to 11·15 p.m.) with heavy showers of rain
0·340	Cloudy. Rain (mid. to 3 a.m. and 10 p.m.) Lightning visible until (4 a.m.) Squally and dull. Thunderstorm in S.E. (8 p.m.)
0·020	Cloudy (mid. to 4 a.m. and 10 a.m. to 1 p.m.) Rain (mid. and 1 a.m.) Thunderstorm in N.E. (2 a.m.) Very fine evening.
0·000	Sky very clear. Dew (3 to 5 a.m.) Horizon rather dull.
0·000	Sky very clear. Dew (1 to 5 a.m.) Horizon rather dull.
0·000	Sky very clear. Dew (4 and 5 a.m.) ☾ Corona (3 a.m.) Several small whirlwinds (1 p.m.) Windtrees (5 p.m.)
...	
5·842	

41. MONTH OF JANUARY, 1859.

DAY OF MONTH.	TEMPERATURE OF AIR.			PRESSURE OF AIR.			PRESSURE OF VAPOR.			RELATIVE HUMIDITY.
	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.
1859.	°	°	°	Inches.	Inches.	Inches.	Inch.	Inch.	Inch.	(0—1.)
JANUARY 1 ...	83·0	96·5	67·3	29·824	29·911	29·698	0·425	0·524	0·337	0·377
„ 2 ...	70·0	79·9	59·9	29·906	30·051	29·720	0·450	0·566	0·289	0·613
„ 3 ...	63·5	70·0	55·8	29·946	30·043	29·867	0·441	0·541	0·353	0·613
„ 4 ...	63·7	71·8	56·3	29·867	29·888	29·832	0·425	0·490	0·361	0·720
„ 5 ...	67·9	83·1	53·7	29·824	29·877	29·753	0·455	0·554	0·357	0·665
JANUARY 6 ...	69·2	80·4	58·6	29·741	29·811	29·672	0·553	0·609	0·490	0·774
„ 7 ...	69·2	80·3	63·1	29·682	29·772	29·640	0·576	0·656	0·508	0·808
„ 8 ...	64·2	69·5	60·4	29·730	29·772	29·667	0·518	0·571	0·495	0·862
„ 9 ...	66·9	81·8	59·2	29·571	29·655	29·480	0·561	0·654	0·473	0·851
„ 10 ...	61·2	67·7	54·3	29·545	29·677	29·492	0·377	0·524	0·269	0·697
JANUARY 11 ...	58·5	61·9	54·9	29·868	30·034	29·689	0·391	0·428	0·360	0·796
„ 12 ...	60·8	69·8	54·2	30·105	30·141	30·035	0·417	0·467	0·347	0·782
„ 13 ...	60·6	68·6	52·7	30·142	30·182	30·109	0·402	0·429	0·379	0·760
„ 14 ...	70·8	86·7	57·1	30·001	30·117	29·880	0·514	0·652	0·416	0·679
„ 15 ...	76·1	86·9	64·8	29·823	29·897	29·731	0·485	0·586	0·395	0·539
JANUARY 16 ...	71·9	80·7	64·6	29·597	29·739	29·460	0·608	0·684	0·552	0·778
„ 17 ...	70·7	84·0	60·8	29·576	29·636	29·474	0·575	0·717	0·441	0·735
„ 18 ...	68·9	77·4	59·0	29·638	29·831	29·555	0·396	0·558	0·276	0·561
„ 19 ...	61·3	82·4	54·5	29·924	30·030	29·805	0·399	0·492	0·330	0·735
„ 20 ...	60·9	67·8	54·7	30·042	30·084	30·002	0·372	0·433	0·303	0·695
JANUARY 21 ...	64·1	74·9	51·7	29·895	30·011	29·790	0·462	0·576	0·379	0·773
„ 22 ...	76·9	92·8	57·7	29·761	29·818	29·697	0·511	0·564	0·451	0·553
„ 23 ...	77·4	86·4	71·6	29·806	29·888	29·718	0·503	0·586	0·391	0·534
„ 24 ...	82·0	96·3	66·2	29 879	29·964	29·808	0·558	0·638	0·499	0·511
„ 25 ...	73·3	77·0	69·7	29·737	29·820	29·640	0·619	0·731	0·532	0·755
JANUARY 26 ...	66·2	75·0	56·4	29·554	29·707	29·437	0·575	0·688	0·415	0·893
„ 27 ...	58·4	66·8	49·8	29·796	29·851	29·715	0·375	0·426	0·331	0·767
„ 28 ...	61·4	72·3	50·2	29·819	29·851	29·794	0·374	0·416	0·332	0·686
„ 29 ...	63·6	73·8	57·1	29·805	29·827	29·774	0·429	0·468	0·397	0·730
„ 30 ...	63·6	73·6	54·9	29·873	29·952	29·831	0·403	0·483	0·335	0·685
MEANS ...	67·54	78·14	58·36	29·809	29·893	29·725	0·468	0·557	0·396	0·698

MONTH OF JANUARY, 1859.

Pressure of Dry Air.	Wind. Direction. Mean.	Extreme from	Extreme to	Force. Mean.	Max.	Min.	Temperature of Surface Soil. Mean.	Max.	Min.	Maximum Temperature of Black Bulb Therm.
Inches.	° ′						°	°	°	°
29·399	179 45	N.E.	N. by W.	3·30	6·0	1·0	86·8	116·7	63·5	110·0
29·456	8 10	S.W.	N.	4·29	6·0	2·0	75·4	95·6	60·4	...
29·505	345 5	S.W. by W.	S.E.	2·96	6·0	1·0	70·0	95·7	53·6	80·4
29·442	0 24	S.S.W.	S.E. by E.	4·0	7·0	2·0	69·6	98·1	51·4	80·8
29·369	38 20	S.W.	N.E.	1·52	4·0	0·5	81·8	125·2	49·2	97·7
29·188	322 22	W. by N.	S. by E.	1·29	3·0	0·0	82·9	120·8	55·8	99·7
29·106	330 59	N.W.	N.E.	2·58	6·0	0·0	79·4	113·4	59·0	94·3
29·212	9 10	W.S.W.	E.	1·71	3·0	1·0	65·6	77·8	59·4	...
29·010	91 4	W.S.W.	N.W.	1·37	5·0	0·0	69·3	102·4	54·8	...
29·168	256 5	N.N.W.	W. by S.	5·38	8·0	2·0	59·6	75·6	49·1	...
29·477	291 26	W.	S.S.W.	5·08	8·0	2·0	57·9	66·8	53·3	...
29·688	353 1	N. by W.	E.	1·83	4·0	0·5	64·3	85·5	51·3	...
29·740	9 26	S.W.	E. by S.	2·13	4·0	0·5	66·0	95·4	47·6	77·0
29·487	49 28	S.S.W.	N.	1·25	3·0	0·5	79·3	113·4	55·5	101·8
29·338	151 44	E. ½ N.	N.	2·77	5·0	0·0	76·0	102·2	60·1	101·0
28·989	176 18	N.E. by E.	S. ½ W.	3·0	6·0	0·5	68·1	80·6	60·3	...
29·001	329 38	N. ½ W.	E.N.E.	1·19	4·0	0·5	74·3	106·7	59·5	...
29·242	264 51	N.E.	S.W. by W.	2·96	5·0	0·5	73·2	99·0	57·7	89·2
29·525	316 31	W. by N.	S.	3·58	5·0	2·0	62·6	81·1	51·6	...
29·670	354 26	W.S.W.	S.E. by E.	2·71	4·0	1·0	64·6	88·2	52·7	...
29·433	354 55	N.W.	N.E. by E.	1·19	3·0	0·5	74·8	111·2	45·6	94·6
29·250	169 2	E.N.E.	N.W.	2·27	5·0	0·5	82·0	117·9	54·2	104·0
29·303	147 44	N.E. by E.	S.W.	4·25	8·0	1·0	71·6	92·7	62·4	...
29·321	149 58	E. by N.	N. by E.	1·79	5·0	0·0	83·7	121·3	58·1	108·7
29·118	158 51	E.N.E.	W.S.W.	1·38	3·0	0·0	69·5	76·1	62·6	...
28·979	214 30	N.N.E.	S.W.	3·79	9 0	1·0	62·3	71·6	53·4	...
29·421	340 39	N.E.	E.S.E.	2·24	4·0	0·2	60·0	83·7	45·1	...
29·445	6 19	W. by N.	E. by S.	1·31	3·0	0·5	68·8	103 1	44·2	81·5
29·376	355 9	N.W. by N.	E.	1·88	5·0	0·2	71·1	103·5	51·3	...
29·470	19 43	S.W. by W.	E. ½ S.	3·54	6·0	1·0	68·9	95·2	51·8	...
29·340	...	...	...	2·62	5·1	0·75	71·31	97·13	54·63	...

MONTH OF JANUARY, 1859—*continued.*

DAY OF MONTH.	Amount of Cloud. (0—10.)			General Form of Cloud.	Electric Tension.			Ozone.		Hours of			
					Positive Mean.	No. of Registrations.							
	Mean.	Max.	Min.			Negative.	0.	Day.	Night.	Fog.	Dew.	Hail.	Rain.
1859.													
January 1 ...	3·02	6·0	0·5	Cir. Strat. Veil	1·90	6	0	0·5	0·0	0·0	0·0	0·0	0·0
„ 2 ...	9·42	10·0	5·0	Cir. Cum., Cu. Strat.	2·42	0	4	7·0	3·0	0·0	0·0	0·0	0·0
„ 3 ...	5·29	10·0	2·0	Cir. Cum., Cu. Str.	3·62	1	1	5·0	4·0	0·0	0·0	0·0	0·0
„ 4 ...	2·79	10·0	0·0	Cir. Cum., Cum. Strat.	3·38	5	7	3·0	3·0	0·0	1·5	0·0	0·0
„ 5 ...	4·33	10·0	0·0	Cir. Cum.	3·69	2	3	0·5	7·0	0·0	1·5	0·0	0·0
January 6 ...	1·98	8·0	0·0	Cir. Cum., Cum. Strat.	2·46	1	1	1·5	2·0	0·0	8·0	0·0	0·0
„ 7 ...	6·04	10·0	2·0	Cir. Cum. Cir. Str., Cum. Strat.	2·34	3	3	4·0	2·0	0·0	3·8	0·0	0·0
„ 8 ...	9·98	10·0	9·5	Cu. Str. & Nimb.	2·26	0	6	4·0	4·0	0·0	0·0	0·0	6·8
„ 9 ...	8·52	10·0	2·0	Cu. Str. & Nimb.	3·70	2	1	5·0	2·0	0·5	2·0	0·0	4·15
„ 10 ...	8·02	10·0	1·0	Cir. Cum., Cu. Str. & Nimb.	1·85	2	1	4·0	6·0	0·0	0·0	0·0	0·9
January 11 ...	10·00	10·0	10·0	Cu. Str. & Nimb.	1·09	0	8	5·5	5·5	0·0	0·0	0·0	1·55
„ 12 ...	7·17	10·0	1·0	Cu. Str. & Nimb.	2·15	1	0	2·0	5·0	0·0	0·5	0·0	2·9
„ 13 ...	2·81	9·0	0·5	Cir. Cum. Cum. Str., Strat.	2·58	0	3	1·0	3·0	0·0	4·7	0·0	0·0
„ 14 ...	4·84	10·0	0·0	Cir. Cum. & Cu. Str.	1·75	2	8	0·5	2·0	0·0	0·0	0·0	0·0
„ 15 ...	6·62	10·0	0·0	Cir. Strat., Cum. Strat.	0·78	5	5	0·5	0·0	0·0	0·5	0·0	3·05
January 16 ...	8·25	10·0	1·0	Cirrus, Nimbus	0·58	2	9	4·0	3·0	0·0	0·0	0·0	10·5
„ 17 ...	7·58	10·0	2·0	Cir. Cum., Cu. Str. & Nimb.	1·69	2	2	2·0	6·0	0·0	0·0	0·0	0·1
„ 18 ...	3·42	10·0	0·0	Cir. Cum.	1·46	0	4	2·0	5·0	0·0	0·0	0·0	1·1
„ 19 ...	7·60	10·0	1·0	Cir. Cum., Cu. Str. & Nimb.	2·46	0	0	4·0	3·0	0·0	0·0	0·0	0·6
„ 20 ...	7·65	10·0	2·0	Cir. Cum., Cum. Str.	3·01	0	1	3·5	5·0	0·0	0·0	0·0	0·1
January 21 ...	1·62	9·0	0·0	Cir. Cum.	3·09	0	3	2·0	2·5	0·0	3·5	0·0	0·0
„ 22 ...	4·21	10·0	0·0	Cir. Str. & Cu. Str.	2·03	5	0	2·0	2·0	0·0	5·5	0·0	0·0
„ 23 ...	9·27	10·0	8·0	Cir. Strat.	3·22	6	2	3·0	1·5	0·0	0·0	0·0	2·5
„ 24 ...	6·83	10·0	2·0	Cir. Str. & Cu. Str.	1·84	0	1	0·5	1·0	0·0	0·0	0·0	0·0
„ 25 ...	8·37	10·0	1·0	Cir. Cum , Cu. Strat.	2·61	1	1	2·0	1·5	0·0	0·0	0·0	3·2
January 26 ...	9·60	10·0	7·0	Cir. Cum., Cu. Str. & Nimb.	2·10	2	4	9·0	3·0	0·0	0·0	0·0	8·15
„ 27 ...	3·50	10·0	1·0	Cir. Cum. & Cu. Str.	4·64	0	0	0·5	6·0	0·5	4·5	0·0	0·8
„ 28 ...	4·37	9·0	0·5	Cir. Str. & Cir. Cum.	4·61	0	0	1·0	1·0	0·0	2·3	0·0	0·0
„ 29 ...	7·33	10·0	3·0	Cir. Str. & Cir. Cum., Cum. Str.	3·00	0	1	2·0	0·5	0·0	2·5	0·0	0·3
„ 30 ...	5·98	10·0	0·0	Cir. Cum., Cum. Str.	2·91	5	2	2·0	6·0	0·0	0·0	0·0	0·0
Means ...	6·21	9·7	2·07	...	2·73	...	...	2·78	3·18	...	...	...	...
Sums	...	...	...	...	...	53	81	...	...	1·0	40·8	0·0	46·7

MONTH OF JANUARY, 1859—*continued.*

Amount of Rain.	REMARKS.
Inches.	
0·000	Fine. Horizon very clear in morning. Squally, with clouds of dust. ⊙ Halo (2 to 6 p.m.) Whirlwinds (2 p.m.)
0·000	Densely overcast. Veil over the sky. ⊙ Halo (11 a.m. to 1 p.m.)
0·000	Fine (1 to 7 a.m.) and (2 to 11 p.m.) Veil over sky (10 p.m.)
0·000	Clear (mid. to 6 a.m.) (noon to 11 p.m.) Dew (4 and 5 a.m.) Clouds of dust (3 p.m.) Rather stormy all day.
0·000	Very fine and clear. Traces of dew (1 a.m.) Cir. Cum. clouds dissolving and forming Cir. Str. veil passing South (3 p.m.)
0·000	Very fine and clear. Dew (mid. to 5 a.m.) and (9 to 11 p.m.) Horizon dull and foggy.
0·000	Fine (mid. to 6 p.m.) Heavy dew (mid and 1 a.m.) (4 and 5 a.m.) Windtrees and veil (noon to 2 p.m.) ⊙ Halo (11 a.m. and 3 p.m.)
0·039	Densely clouded. Rain (1 to 8 a.m.) Horizon hazy. Thunder (at 3 p.m.) towards North.
0·513	Very cloudy (until 9 p.m.) Dew (2 to 4 a.m.) Rain (5 a.m.) (2 to 9 p.m.) Fog (3 a.m.) Thunder (1 p.m.) in North. Thunder and lightning in East (10 p.m.)
0·162	Fine (5 to 10 a.m.), the rest very cloudy. Rain (3 a.m.) (3, 5, and 6 p.m.) Heavy squall (at 5h. 20m. p.m.) and (9 p.m.)
0·004	Densely overcast. Rain (9 a.m. to 3 p.m.) Squally in the morning.
0·113	Cloudy (mid. to 5 p.m.) Evening very clear. Rain (5 to 10 a.m.) Dew (11 p.m.)
0·000	Fine. Dew (mid. to 4 a.m.) and (11 p.m.)
0·000	Overcast (mid. to 10 a.m.), the rest of the day very fine.
0·000	Fine (mid. to 7 a.m.) Dew (5 a.m.) Rain (8 to 11 p.m.) Veil (6 a.m.) Rainbow (7 p.m.)
0·273	Fine (4 to 8 p.m.) Rain (mid. to 1 p.m.) Veil, windtrees, and ⊙ halo (6 p.m.) Lightning all the evening in W. and S.W.
0·001	Cloudy. Rain (mid.) Thunder and lightning in N.E. (mid. to 3 a.m.) Very close and sultry. Heavy thunder clouds (3 p.m.)
0·164	Cloudy (mid. to 6 a.m.) Very fine (7 a.m. to 11 p.m.) Rain (2 and 3 a.m.) Squalls and dust in the afternoon.
0·017	Fine (mid. to 6 a.m.), the rest of the day very cloudy. Rain (noon, 3 p.m., 6 p.m., and 8 p.m.)
0·000	Very cloudy (until 2 p.m.) Rain (5 a.m.) Wind rather squally during the night. Afternoon and evening fine.
0·000	Fine day. Dew (2 to 5 a.m.) Sky particularly clear in the evening.
0·000	Fine and clear (mid. to 1 p.m.) Dull and cloudy (2 to 11 p.m) Slight dew (mid. to 5 a.m.) Hot wind (8h. 45m. a.m. to 6 p.m.)
0·095	Very cloudy. Lightning all the morning towards the West. Thunder storm (2 to 4 p.m.) Rain (7 a.m.) (1 to 6 p.m.)
0·000	Cloudy. Veil and windtrees. ☾ Halo (4 a.m.) Lightning all the evening in N.W.
0·110	Very cloudy (mid. to 6 p.m.) Rain (9 and 10 a.m.) (noon to 2 p.m.) Fine evening. Lightning in N.W.
1·043	Very cloudy. Rain (7 a.m. to 11 p.m.) ☾ Halo (2 and 4 a.m.) Thunder in N. and W. (at noon).
0·048	Fine (mid. to 6 a.m.) and (noon to 11 p.m.) Dew (mid., 1, 2 to 4 a.m.) Fog (7 a.m.) Rain (9 and 10 a.m.) Veil (9 and 10 p.m.)
0·060	Fine. Dew (2 to 4 a.m.) ☾ Halo (1 and 2 a.m.) Veil and windtrees all day. ⊙ Halo (11 a.m. to 1 p.m.) and (4 p.m.)
0·000	Fine morning, rest very cloudy. Dew (3 to 5 a.m.) Rain (8 and 11 p.m.) Wind light and unsteady.
0·000	Very cloudy (until 3 p.m.), the rest fine. Wind light but squally. Sky exceedingly clear in the evening.
...	
2·582	

42. MONTH OF FEBRUARY, 1859.

DAY OF MONTH.	Temperature of Air.			Pressure of Air.			Pressure of Vapor.			Relative Humidity.
	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.
1859.	°	°	°	Inches.	Inches.	Inches.	Inch.	Inch.	Inch.	(0—1.)
January 31 ...	62·7	76·1	50·0	29·904	29·955	29·841	0·397	0·460	0·301	0·697
February 1 ...	63·5	71·9	53·2	29·921	29·977	29·866	0·471	0·540	0·405	0·804
„ 2 ...	67·6	76·2	56·8	30·000	30·030	29·950	0·521	0·621	0·443	0·772
„ 3 ...	77·4	92·7	59·1	29·950	29·995	29·892	0·500	0·550	0·422	0·532
„ 4 ...	74·9	92·9	65·3	29·891	29·921	29·860	0·569	0·696	0·490	0·656
February 5 ...	78·4	98·8	63·2	29·782	29·882	29·682	0·627	0·756	0·534	0·550
„ 6 ...	86·5	104·0	70·0	29·572	29·700	29·472	0·461	0·614	0·270	0·365
„ 7 ...	67·9	75·6	60·9	29·713	29·793	29·586	0·484	0·556	0·426	0·710
„ 8 ...	66·1	74·0	59·3	29·742	29·787	29·687	0·416	0·463	0·378	0·649
„ 9 ...	58·6	69·3	51·3	29·651	29·776	29·590	0·356	0·440	0·307	0·724
February 10 ...	57·2	68·5	47·5	29·779	29·845	29·704	0·360	0·407	0·354	0·771
„ 11 ...	61·2	78·2	47·5	29·589	29·683	29·170	0·334	0·419	0·273	0·617
„ 12 ...	59·9	69·8	50·9	29·554	29·644	29·507	0·359	0·482	0·289	0·696
„ 13 ...	61·1	72·2	52·7	29·806	29·875	29·674	0·355	0·401	0·316	0·659
„ 14 ...	61·2	72·5	49·1	29·754	29·860	29·666	0·393	0·444	0·328	0·726
February 15 ...	60·9	69·8	54·6	29·794	29·906	29·701	0·379	0·409	0·342	0·708
„ 16 ...	56·6	64·0	49·7	29·940	30·011	29·885	0·373	0·409	0·332	0·813
„ 17 ...	61·2	71·3	49·7	29·968	30·037	29·913	0·372	0·467	0·296	0·686
„ 18 ...	63·9	78·2	50·0	29·931	30·001	29·841	0·399	0·443	0·361	0·670
„ 19 ...	71·8	84·3	57·1	29·802	29·866	29·722	0·384	0·415	0·341	0·493
February 20 ...	77·8	93·4	65·1	29·692	29·770	29·610	0·414	0·546	0·362	0·435
„ 21 ...	62·3	72·0	54·9	29·802	29·851	29·737	0·418	0·495	0·352	0·761
„ 22 ...	59·9	69·8	53·7	29·627	29·788	29·521	0·385	0·520	0·325	0·706
„ 23 ...	59·6	66·0	52·6	29·659	29·764	29·543	0·369	0·435	0·325	0·722
„ 24 ...	60·0	66·7	54·6	29·726	29·786	29·687	0·376	0·422	0·323	0·726
February 25 ...	61·4	70·9	54·2	29·827	29·916	29·761	0·380	0·449	0·346	0·697
„ 26 ...	58·5	63·5	52·4	29·988	30·067	29·886	0·335	0·388	0·300	0·682
„ 27 ...	57·3	69·6	46·6	30·071	30·101	30·042	0·352	0·438	0·272	0·749
„ 28 ...	65·3	83·4	50·4	29·968	30·092	29·868	0·394	0·641	0·283	0·631
March 1 ...	70·4	87·5	61·9	29·839	29·927	29·731	0·400	0·513	0·303	0·538
Means ...	65·04	76·77	54·61	29·808	29·887	29·720	0·411	0·495	0·346	0·665

MONTH OF FEBRUARY, 1859.

Pressure of Dry Air.	Wind. Direction. Mean.	Extreme from	Extreme to	Force. Mean.	Max.	Min.	Temperature of Surface Soil. Mean.	Max.	Min.	Maximum Temperature of Black Bulb Therm.
Inches.	° ′						°	°	°	°
29·507	7 40	E.S.E.	S.E.	1·6	5·0	0·2	74·9	116·1	45·0	...
29·450	344 2	All round.		1·7	4·0	0·5	74·5	112·5	48·9	79·2
29·479	357 54	S.W. by W.	N.N.W.	1·5	4·0	0·0	77·3	115·7	51·8	88·7
29·450	159 15	E. by N.	N.W.	3·0	7·0	0·5	82·3	120·2	55·8	102·9
29·322	58 27	W.S.W.	N.E. by N.	2·0	3·0	0·5	85·7	132·6	62·0	110·3
29·155	353 2	N.E.	S. by E.	1·1	3·0	0·2	92·3	138·2	60·6	111·9
29·111	197 30	N.E. by E.	S. by E.	4·1	8·0	1·0	90·7	122·4	67·3	109·6
29·229	352 32	W. ½ S.	S.E. by E.	2·2	4·0	1·0	78·7	112·8	61·9	83·2
29·326	3 18	W.S.W.	N.W.	1·6	3·0	0·5	75·9	106·7	59·6	79·7
29·295	280 43	N.W.	S.W. by S.	3·2	7·0	1·0	59·6	82·2	47·6	71·1
29·419	324 4	N.E.	E.N.E.	1·4	3·0	0·2	61·0	91·7	45·0	...
29·255	197 10	E. by N.	W.S.W.	3·7	10·0	0·0	60·3	80·0	47·5	...
29·199	208 36	N.	W.	4·0	8·0	1·0	57·6	78·3	45·4	...
29·451	296 55	N.N.W.	E. by S.	2·2	4·0	0·5	66·0	95·7	47·0	81·5
29·361	23 14	S.S.W.	N.E. by N.	1·0	3·0	0·0	69·0	97·9	46·7	...
29·415	330 22	W.	S.E. by E.	2·0	4·0	0·0	67·8	93·0	54·2	...
29·567	346 3	All round.		2·1	5·0	0·5	57·9	72·6	47·0	...
29·596	22 45	S.W. by W.	E.	2·5	5·0	0·5	68·3	98·4	45·0	...
29·532	40 40	S. ½ W.	N.	1·1	3·0	0·0	74·8	116·1	47·7	...
29·418	156 13	N.E. by E.	N.	3·3	6·0	0·5	76·2	106·5	55·1	...
29·278	158 40	S.W.	N. by W.	3·3	8·0	0·2	79·9	115·5	57·8	...
29·384	320 16	W. ½ S.	S.E.	2·2	7·0	0·0	68·0	106·7	51·4	...
29·242	58 17	All round.		0·9	3·0	0·0	62·7	92·0	50·0	...
29·290	353 33	S.W.	S.E.	3·7	6·0	1·0	61·8	90·6	45·0	...
29·350	330 21	W. by N.	S.E.	4·4	8·0	1·0	62·0	86·9	49·4	...
29·447	273 14	N.W. by W.	S.	2·8	4·0	2·0	63·6	78·5	53·6	...
29·653	321 52	W.	S.E. by S.	2·6	4·0	1·0	68·7	99·9	50·3	...
29·719	357 38	N.W.	E.S.E.	1·5	3·0	0·2	68·3	106·7	43·7	...
29·574	79 31	S.S.W.	N. ½ W.	0·9	3·0	0·0	75·5	117·9	44·8	...
29·439	130 8	N.E.	S.E.	2·8	5·0	0·2	71·5	100·2	57·8	...
29·397	...	...	...	2·35	5·0	0·47	71·09	102·82	51·5	...

MONTH OF FEBRUARY, 1859—*continued.*

DAY OF MONTH.	Amount of Cloud. (0—10.)			General Form of Cloud.	Electric Tension.			Ozone.		Hours of			
					Positive Mean.	No. of Registrations.							
	Mean.	Max.	Min.			Negative.	0.	Day.	Night.	Fog.	Dew.	Hail.	Rain.
1859.													
January 31 ...	0·47	1·0	0·0	Cir. Cu. and Cir. Str.	3·48	0	3	1·0	2·0	0·0	2·5	0·0	0·0
February 1 ...	0·77	8·0	0·0	Cir. Cum.	2·67	0	0	2·0	1·5	0·0	5·5	0·0	0·0
„ 2 ...	0·04	0·5	0·0	Clear	2·30	0	4	0·5	3·0	0·0	2·2	0·0	0·0
„ 3 ...	2·12	6·0	0·0	Cir. Str.	0·55	9	7	0·0	0·5	0·0	6·0	0·0	0·0
„ 4 ...	0·71	2·0	0·0	Cir. Cu. and Cir. Str.	1·15	2	5	0·0	0·5	0·0	3·0	0·0	0·0
February 5 ...	4·12	10·0	0·0	0	1·72	4	2	1·0	6·0	9·0	3·5	0·0	0·0
„ 6 ...	2·87	10·0	0·0	Cir. Cum.	1·05	7	1	3·0	4·0	0·0	0·0	0·0	0·0
„ 7 ...	5·06	10·0	0·0	Cir. Cu. and Cu. Str.	1·28	0	9	3·0	5·0	0·0	0·0	0·0	0·0
„ 8 ...	8·46	10·0	4·0	Cir. Str. and Cu. Str.	1·50	2	4	4·0	4·0	0·0	0·0	0·0	0·0
„ 9 ...	7·12	10·0	1·0	Cum. Str.	2·70	3	4	7·0	2·5	0·0	0·0	0·0	2·55
February 10 ...	5·50	10·0	0·0	Cum. Str.	3·27	0	0	2·0	5·0	0·0	1·0	0·0	3·2
„ 11 ...	5·75	10·0	0·5	Cum. Str.	2·12	11	1	0·5	1·0	0·0	6·0	0·0	1·3
„ 12 ...	7·71	10·0	2·0	Cu. Str. and Nimb.	2·38	4	4	2·5	6·0	0·0	0·0	0·0	1·5
„ 13 ...	5·96	9·0	2·0	Cir. Cu. Cir. Str. & Cu. Str.	3·77	0	0	1·0	7·0	0·0	0·0	0·0	0·0
„ 14 ...	6·27	10·0	9·5	Cir. Str.	3·77	0	0	2·0	4·0	0·0	2·2	0·0	0·0
February 15 ...	7·52	10·0	2·0	Cir. Cu. and Cu. Str.	2·32	0	6	1·5	4·0	0·0	0·0	0·0	2·0
„ 16 ...	7·54	10·0	3·0	Cir. Cu. and Cu. Str.	3·76	0	1	6·0	3·0	0·0	3·5	0·0	1·6
„ 17 ...	2·58	6·0	0·0	Cir. Cu. and Cu. Str.	3·24	2	4	3·0	1·0	0·0	6·25	0·0	0·0
„ 18 ...	0·87	3·0	0·0	Cir. Cum.	2·80	0	5	3·0	1·0	2·0	3·5	0·0	0·0
„ 19 ...	4·48	10·0	0·0	Cir. Cu. and Cir. Str.	2·50	8	2	1·0	4·0	0·0	0·0	0·0	0·0
February 20 ...	3·42	9·5	0·0	Cir. Cum.	3·36	9	0	0·0	1·0	0·0	0·0	0·0	0·0
„ 21 ...	8·19	10·0	1·0	Cum. Str.	3·21	1	4	4·0	6·0	0·0	0·0	0·0	1·1
„ 22 ...	9·48	10·0	3·0	Cir. Str. and Cu. Str.	3·95	5	2	3·0	1·5	0·0	0·0	0·0	0·6
„ 23 ...	5·42	9·0	2·0	Cir. Cu. and Cum.	3·70	1	0	4·0	3·0	0·2	0·0	0·0	0·25
„ 24 ...	4·96	10·0	0·5	Cum. and Cu. Str.	3·87	2	4	4·0	7·0	0·0	0·0	0 0	0·9
February 25 ...	8·63	10·0	4·0	Cum. Str.	2·77	0	0	2·0	5·0	0·0	0·0	0·0	0·0
„ 26 ...	5·63	10·0	1·0	Cir. Cum. and Cu Str.	2·40	0	2	2·5	4·0	0·0	0·0	0·0	0·0
„ 27 ...	3·28	9·8	0·0	Cir. Str.	3·45	0	0	2·0	3·0	0·0	1·75	0·0	0·0
„ 28 ...	2·31	8·0	0·0	Cir. Str.	2·95	0	1	0·5	2·0	0·0	0·0	0·0	0·0
March 1 ...	8·6	10·0	1·0	Cir. Str.	2·12	6	2	2·0	2·0	0·0	0·0	0·0	1·45
Means ...	4·86	8·40	1·22	...	2·67	...	...	2·27	3·32	...	...	...	..
Sums ...	...	...	...	...	...	76	77	...	...	11·2	46·9	0·0	16·45

MONTH OF FEBRUARY, 1859—*continued.*

Amount of Rain.	REMARKS.
Inches.	
0·000	Very fine and clear. Dew (3 to 5 a.m.) Veil and windtrees.
0·000	Very fine and clear. Dew (1 to 6 a.m.)
0·000	Very fine and clear. Horizon hazy. Rose color radial streaks observed at sunset.
0·000	Very fine and clear. Dew (mid to 5 a.m.) Hot wind and clouds of dust (8 a.m.) ⊙ Halo (3 and 5 p.m.)
0·000	Very fine and clear. Dew (9 to 11 p.m.) Veil (2 a.m.) Horizon hazy.
0·000	Fog (4 a.m. to noon), the rest very fine and clear. Dew (mid. to 3 a.m.) Dark red sunset.
0·000	Fine (mid. to 4 p.m.), the rest very fine and clear. Heavy squalls, with clouds of dust and small whirlwinds, in the evening. A cold wind from S., with gusts of hot air frequently perceptible.
0·000	Very cloudy (mid. to 11 a.m.) Light squalls. Dull and hazy. Rest of day fine.
0·000	Very cloudy all day. Veil (6 a.m.) Solar rays (5·30 a.m.) Wind changeable.
0·202	Fine (mid. to 5 a.m.), rest cloudy. Rain (noon to 8 p.m.) and (11 p.m.) Very squally in afternoon.
0·049	Cloudy (4 a.m. to 3 p.m.), the rest fine. Dew (3 a.m.) Misty rain (7 to 11 a.m.) Aurora Aust. (10 p.m.)
0·000	Fine and clear (mid. to 6 a.m.) (9 to 11 p.m.) Heavy dew (mid to 5 a.m.) Rain (6 to 8 p.m.) Heavy squalls and clouds of dust.
0·152	Cloudy. Rain (6 to 8, and 10 p.m.) Heavy squalls (3 p.m.) Wind very unsteady.
0·069	Fine day, rather cloudy. Veil and ⊙ Halo (6 p.m.) ☾ Halo (9, 10, and 11 p.m.)
0·000	Fine day, rather cloudy. Veil and ⊙ Halo (9 a.m. to 1 p.m.) Dew (3 to 5 a.m.)
0·000	Cloudy. Rain (noon, 9 to 11 p.m.) Light squalls in morning.
0·097	Fine (2 to 8 a.m.), the rest very cloudy. Rain (mid. 1 a.m., and noon.) Dew (2 to 6 a.m.)
0·000	Fine. Dew (mid. to 6 a.m.) Squally (10 a.m.) (3, 4, & 11 p.m.) Total eclipse ☾ (8·21 p.m.)
0·000	Very fine. Dew (3 to 6 a.m.) Fog (7 and 9 a.m.) Veil and ☾ Halo (diameter 50°).
0·000	Very cloudy (mid. to 11 a.m.) Fine (noon to 11 p.m.) ☾ Halo (mid. to 2 a.m.)
0·000	Very fine (mid. to 1 p.m., 7 to 10 p.m.) Hot wind and clouds of dust (9 a.m. to 4 p.m.) Lightning towards N.W. (7 and 8 p.m.)
0·037	Very cloudy. Rain (5, 6, and 8 a.m.) and (4 to 6 p.m.) Lightning in W. (3 a.m.) Thunder and lightning in North (4 a.m.)
0·022	Very cloudy. Rain (9 and 10 a.m.) and (10 p.m.) ☾ Halo (mid., 1, and 3 a.m.)
0·000	Rather cloudy. Dew (3 and 4 a.m.) Rain (6 p.m.) Squally.
0·113	Morning rather cloudy. Afternoon very fine. Heavy showers and slight squalls (mid. and 1 a.m.) Traces of an Aurora (10·15).
0·000	Cloudy. Light breeze all day. Squally in evening.
0·000	Cloudy night. Fine day. Light squalls. Cloudy again (8 to 11 p.m.)
0·000	Cloudy (9 a.m. to 3 p.m.), rest very fine. Dew (3 to 5 a.m.) Aurora Aust. (12·25 a.m.) ⊙ Halo (3 p.m.)
0·000	Sky beautifully clear. Fata Morgana over bay (3 p.m.)
0·005	Very cloudy. Lightning in West (5 a.m.) Hot wind and dust (7·15). Rain (1, 2, 9, and 10 p.m.) Considerable oscillations in pressure of air.
...	
0·746	

III.—DIURNAL VARIATIONS OF THE PRINCIPAL METEOROLOGICAL ELEMENTS FOR EACH MONTH OF THE YEAR, ENDING 1st MARCH, 1859.

43. The several Tables designed to illustrate the diurnal variations in the different meteorological elements, are as follow :—

(I.) Hourly Variation in Temperature of Air.
(II.) „ Pressure of Air.
(III.) „ Pressure of Vapor.
(IV.) „ Pressure of Dry Air.
(V.) „ Temperature of Surface Soil.
(VI.) „ Force of Wind.
(VII.) „ Amount of Cloud.
(VIII.) „ Atmospheric Electricity (pos.)
(IX.) „ Hours of Rain.
(X.) Diurnal Curve of the Principal Meteorological Elements.

The figures given in the Tables I. to VIII. represent the means of the observations for each hour during each calendar month, and are consequently the results derived from 30 or 31 readings, as the case may be.

44. The values given in Table IX. are the sums of the periods of rain for each hour in each month respectively ; thus, in the month of November, for midnight we find 2·8, which signifies that in that month out of the 30 hours, between 11 p.m. and midnight, 2·8 hours have been rainy. In Table X. the figures given represent the means of 365 observations, taken at the same hour.

45. *Temperature of Air.*—The amplitude in the diurnal variation of this element for the several months of the year is as follows :—

1858.	DEGREES.	1858.	DEGREES.
March	17·37	October	16·94
April	15·64	November	17·84
May	11·95	December	18·92
June	13·23		
July	10·62	1859.	
August	12·53	January	14·90
September	11·90	February	19·39

The mean amplitude of the diurnal variations for the year is therefore 15·10.

46. *Pressure of Air.*—The amplitude in the diurnal variation for the different months, is as follows :—

1858.	INCHES.	1858.	INCHES.
March	0·067	October	0·076
April	0·063	November	0·072
May	0·062	December	0·073
June	0·055		
July	0·045	1859.	
August	0·053	January	0·071
September	0·055	February	0·072

The mean amplitude in the diurnal variation for the year, amounts to 0·064 inches.

These results have not been reduced to the level of the sea.

47. *Pressure of Vapor.*—The amplitude of the diurnal variation for each month throughout the year is as follows:—

1858.	INCHES.	1858.	INCHES.
March	0·049	October	0·051
April	0·042	November	0·062
May	0·044	December	0·047
June	0·048		
July	0·040	1859.	
August	0·037	January	0·058
September	0·039	February	0·044

Consequently the mean diurnal amplitude amounts to 0·047 inches.

48. *Pressure of Dry Air.*—The amplitudes of the diurnal variations are as follow:—

1858.	INCHES.	1858.	INCHES.
March	0·079	October	0·094
April	0·077	November	0·094
May	0·075	December	0·090
June	0·070		
July	0·062	1859.	
August	0·073	January	0·105
September	0·070	February	0·097

The mean value for the year is therefore 0·082 inches.

49. *Temperature of Soil.*—The amplitudes of the diurnal variations are for the several months as follow:—

1858.	DEGREES.	1858.	DEGREES.
March	33·39	October	48·74
April	24·98	November	46·19
May	16·03	December	43·94
June	15·87		
July	14·63	1859.	
August	22·12	January	38·14
September	23·18	February	49·53

The mean value for the year consequently amounts to 31·40 degrees.

50. A more minute description of the peculiarities of the curves of the various elements is given under the heading "Explanation of Diagrams," attached to this Report.

(I.)—HOURLY VARIATION IN TEMPERATURE OF AIR.

HOUR.	1858.										1859.	
	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	JANUARY.	FEBRUARY.
Midnight	60·87	54·64	50·79	45·50	44·37	47·03	48·72	51·38	56·46	56·75	62·51	58·64
1	60·35	53·83	50·25	45·27	43·99	46·65	48·13	50·72	55·67	56·19	61·75	57·96
2	59·72	53·51	50·11	44·83	43·93	46·26	47·66	50·20	55·29	55·58	61·36	56·86
3	59·22	52·86	49·53	44·70	43·72	45·97	47·19	49·62	54·64	55·09	60·66	56·32
4	58·60	52·41	49·59	44·06	43·72	45·92	46·85	49·39	54·41	54·64	60·12	55·89
5	58·62	52·25	49·37	43·95	43·47	45·54	46·81	49·37	54·41	55·36	60·01	55·43
6	58·19	52·25	49·44	43·88	43·12	45·23	46·62	50·49	55·98	57·74	61·63	56·41
7	59·97	52·41	49·48	43·61	43·23	45·52	47·95	53·69	59·97	60·64	64·22	59·74
8	63·77	54·64	51·06	44·60	43·88	47·00	50·56	57·04	63·70	63·16	66·18	64·00
9	67·57	58·87	53·83	47·50	46·20	50·41	53·55	60·12	66·19	66·87	69·89	67·32
10	70·18	62·23	57·09	51·06	48·58	53·71	55·40	62·83	69·21	68·99	72·12	69·67
11	72·45	64·65	59·32	53·87	51·17	55·63	56·79	64·86	71·35	70·45	73·96	72·12
Noon	73·78	66·27	61·00	55·32	52·18	56·75	57·72	66·20	71·87	71·78	74·23	73·26
1	74·91	67·89	61·32	55·63	52·86	57·76	58·17	66·31	71·96	73·27	74·62	74·82
2	75·56	67·78	61·32	56·35	53·74	57·40	58·52	66·20	72·25	73·56	74·91	74·59
3	74·68	66 72	59·97	55·63	52·41	56·86	57·65	64·76	70·84	71·96	74·35	74·41
4	73·04	65·55	58·42	54·42	51·06	55·40	56·30	63·43	70·45	70·71	73·49	73·13
5	70·89	63·10	56·52	51·80	48·58	52·70	54·68	61·88	68·00	68·67	72·75	72·16
6	68·45	61·00	55·27	50·18	47·95	50·95	52·68	59·34	65·30	66·34	71·80	69·33
7	67·10	59·09	54·05	49·06	47·03	50·18	51·46	57·31	62·87	6422	68·56	66·22
8	64·60	57·92	53·51	47·73	46·60	49·42	50·67	56·19	60·79	61·77	66·47	64·42
9	63·42	56·71	52·41	47·52	45·72	48·97	50·13	54·77	59·87	60·64	65·12	61·81
10	62·67	55·80	51·85	46·20	45·50	48·29	49·46	53·74	58·77	50·54	64·33	61·43
11	61·54	54·86	51·17	45·72	45·27	48·16	48·89	52·57	57·13	58·41	62·80	59·99

(II.)—HOURLY VARIATION IN PRESSURE OF AIR.

HOUR.	1858.										1859.	
	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	JANUARY.	FEBRUARY.
Midnight	29·955	30·036	29·941	30·037	29·974	29·805	29·772	29·981	29·845	29·749	29·820	29·812
1	·950	·034	·936	·030	·970	·802	·769	·975	·836	·740	·812	·803
2	·943	·029	·933	·044	·964	·795	·760	·970	·830	·723	·803	·800
3	·935	·022	·930	·027	·945	·788	·746	·965	·825	·719	·796	·796
4	·932	·017	·924	·026	·948	·775	·745	·966	·828	·718	·803	·794
5	·935	·029	·927	·028	·947	·783	·747	·971	·836	·727	·809	·797
6	·949	·026	·930	·034	·952	·788	·753	·980	·846	·740	·826	·807
7	·961	·043	·934	·045	·963	·797	·767	·991	·856	·751	·837	·821
8	·970	·058	·949	·056	·974	·807	·777	30·001	·862	·753	·841	·824
9	·977	·065	·954	·066	·980	·813	·783	·004	·863	·751	·840	·827
10	·976	·064	·951	·071	·983	·813	·780	29·999	·859	·745	·836	·825
11	·969	·056	·943	·066	·981	·806	·773	·987	·850	·740	·836	·821
Noon	·954	·041	·924	·049	·967	·791	·766	·972	·839	·733	·818	·807
1	·939	·021	·906	·031	·948	·773	·750	·959	·823	·718	·811	·793
2	·924	·008	·894	·030	·940	·762	·741	·943	·803	·705	·797	·782
3	·913	·003	·892	·016	·938	·760	·733	·931	·797	·694	·789	·767
4	·910	·002	·893	·020	·939	·760	·736	·928	·791	·691	·777	·759
5	·913	·005	·897	·026	·945	·768	·741	·933	·793	·689	·770	·755
6	·920	·017	·906	·035	·954	·781	·751	·946	·806	·706	·778	·764
7	·933	·031	·922	·040	·963	·793	·763	·960	·820	·729	·796	·779
8	·945	·041	·921	·053	·970	·800	·774	·974	·836	·743	·810	·791
9	·954	·050	·925	·059	·973	·809	·788	·978	·846	·757	·827	·803
10	·967	·056	·926	·060	·975	·809	·786	·976	·847	·759	·825	·812
11	·964	·055	·924	·063	·972	·799	·781	·976	·844	·762	·825	·812

(III.)—HOURLY VARIATION IN PRESSURE OF VAPOR.

HOUR.	1858.									1859.	
	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	JANUARY.	FEBRUARY.
Midnight	0·449	0·365	0·343	0·300	0·282	0·284	0·292	0·331	0·397	0·411	0·459	0·414
1	·451	·358	·340	·297	·278	·286	·288	·323	·384	·409	·452	·408
2	·437	·361	·340	·292	·275	·283	·287	·312	·384	·404	·442	·406
3	·429	·355	·338	·286	·275	·281	·283	·304	·377	·403	·442	·401
4	·420	·354	·337	·285	·274	·284	·278	·303	·375	·397	·440	·399
5	·419	·347	·336	·287	·270	·281	·277	·300	·376	·394	·438	·391
6	·416	·345	·339	280	·267	·283	·277	·302	·382	·402	·453	·387
7	·420	·339	·338	·282	·268	·279	·285	·319	·393	·409	·453	·403
8	·427	·351	·349	·287	·275	·289	·294	·335	·393	·416	·456	·399
9	·435	·364	·362	·306	·289	·305	·304	·349	·391	·425	·470	·401
10	·435	·373	·376	·321	·301	·313	·306	·351	·395	·430	·477	·410
11	·451	·374	·380	·324	·307	·314	·309	·344	·394	·432	·482	·419
Noon	·456	·375	·374	·328	·307	·308	·301	·347	·388	·431	·496	·414
1	·453	·373	·366	·324	·303	·312	·304	·345	·395	·441	·488	·420
2	·451	·368	·369	·317	·303	·316	·310	·345	·399	·436	·490	·418
3	·445	·369	·366	·317	·300	·305	·315	·347	·402	·424	·494	·431
4	·442	·372	·366	·318	·300	·301	·314	·340	·410	·429	·490	·430
5	·449	·374	·362	·318	·296	·307	·316	·339	·415	·437	·490	·418
6	·456	·381	·360	·321	·294	·300	·311	·338	·423	·432	·480	·426
7	·465	·381	·360	·314	·292	·297	·311	·335	·421	·429	·481	·421
8	·459	·380	·357	·313	·290	·294	·306	·337	·429	·429	·479	·415
9	.452	·380	·351	·304	·284	·290	·306	·345	·437	·437	·477	·423
10	·456	·374	·349	·300	·281	·290	·294	·331	·432	·432	·469	·418
11	·448	·366	·347	·294	·286	·287	·293	·330	·410	·429	·461	·421

(IV.)—HOURLY VARIATION IN PRESSURE OF DRY AIR.

HOUR.	1858.									1859.	
	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	JANUARY.	FEBRUARY.
Midnight	29·506	29·671	29·598	29·737	29·692	29·521	29·480	29·650	29·448	29·338	29·361	29·408
1	·499	·676	·596	·733	·692	·516	·481	·653	·452	·331	·360	·395
2	·506	·668	·593	·752	·669	·512	·473	·658	·446	·319	·361	·394
3	·506	·667	·592	·741	·670	·507	·463	·661	·448	·316	·354	·395
4	·512	·663	·587	·741	·674	·491	·467	·663	·453	·321	·363	·395
5	·516	·682	·591	·759	·677	·502	·470	·671	·460	·333	·371	·406
6	·533	·681	·591	·754	·685	·505	·476	·678	·464	·338	·373	·420
7	·541	·704	·596	·763	·695	·518	·482	·672	·463	·342	·384	·418
8	·543	·707	·600	·769	·699	·518	·483	·666	·469	·337	·385	·425
9	·542	·701	·592	·760	·691	·508	·479	·655	·472	·326	·370	·426
10	·541	·691	·575	·750	·682	·500	·474	·648	·464	·315	359	·415
11	·518	·682	·563	·742	·674	·492	·462	·643	·456	·308	·354	·402
Noon	·498	·666	·550	·721	·660	·483	·465	·625	·451	·302	·322	·393
1	·486	·648	·540	·707	·645	·461	·446	·615	·428	·277	·323	·373
2	·473	·640	·525	·703	·637	·446	·431	·598	·404	·269	·307	·364
3	·468	·634	·526	·699	·638	·455	·418	·584	·395	·270	·285	·336
4	·468	·630	·527	·702	·639	·459	·422	·588	·381	·262	·287	·329
5	·464	·631	·535	·708	·649	·461	·425	·592	·378	·252	·280	·337
6	·464	·636	·546	·714	·660	·481	·440	·608	·383	·274	·298	·338
7	·468	·650	·562	·726	·671	·496	·452	·625	·399	·300	·315	·358
8	·486	·661	·564	·740	·680	·506	·468	·637	·407	·314	·331	·376
9	·502	·670	·574	·755	·689	·519	·482	·633	·409	·320	·350	·380
10	·511	·682	·577	·760	·694	·519	·492	·645	·415	·327	·356	·394
11	·516	·689	·577	·769	·686	·512	·488	·646	·434	·333	·364	·391

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(V.)—HOURLY VARIATION IN SURFACE SOIL.

HOUR.	1858.										1859.	
	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	JANUARY.	FEBRUARY.
Midnight	61·90	55·85	50·00	44·60	43·03	46·40	48·02	50·97	54·95	55·18	60·19	57·65
1	61·25	54·95	49·71	44·26	42·75	46·06	47·30	51·57	54·34	54·27	59·27	56·53
2	60·57	54·50	49·32	43·81	42·35	45·68	46·85	50·67	53·83	53·15	58·40	55·40
3	60·13	54·05	48·96	43·36	42·57	45·27	46·40	49·86	53·10	52·47	57·65	54·50
4	59·40	53·37	48·96	43·03	42·58	45·23	46·18	49·53	52·41	51·96	57·05	54·14
5	59·67	53·38	48·82	42·96	42 35	44·82	45·95	49·28	52·84	52·32	56·95	53·71
6	59·36	53·82	49·01	42·96	41·90	44·64	45·72	50·90	55·53	56·30	59·95	53·98
7	61·70	53·83	48·94	42·90	41·67	44·60	46·63	54·86	63·72	62·33	64·90	59·90
8	68·23	56·97	50·79	43·92	43·25	47·07	50·66	60·73	73·40	70·03	71·94	69·35
9	75·65	62·82	54·50	47·53	46·62	52·63	56·07	69·21	79·34	78·92	80·62	79·21
10	81·73	67·55	59·36	52·70	50·45	57·87	60·55	76·04	87·35	84·20	88·00	86·99
11	88·70	72·72	63·14	57·20	54·27	62·26	64·38	81·88	95·90	89·15	91·33	93·43
Noon	92·07	75·65	64·85	58·77	56·30	65·16	67·32	84·51	97·93	93·52	94·96	99·05
1	92·75	75·65	63·72	57·20	55·08	66·72	68·90	88·02	98·60	94·10	95·09	100·62
2	90·50	78·35	64·85	57·20	56·30	64·85	68·90	83·75	98·15	95·90	93·69	103·24
3	86·00	74·75	62·74	56·70	55·17	63·61	66·20	81·36	91·29	90·27	90·70	96·35
4	83·07	71·37	59·90	53·82	51·80	59·52	62·17	76·44	86·22	85·21	86·38	90·05
5	77·00	66·65	56·07	50·00	47·79	54·39	58·26	70·14	77·45	78·35	82·00	83·75
6	70·93	62·28	54·18	48·20	46·40	50·27	53·82	63·70	69·19	68·45	72·45	75·20
7	67·78	60·35	53·27	47·52	45·59	48·78	51·80	59·95	63·82	65·08	70·04	67·78
8	66·20	58·78	52·03	46·62	45·05	47·93	50·56	57·81	60·80	61·81	65·75	64·85
9	64·94	57·42	51·26	45·72	44·15	47·52	49·41	55·38	59·36	59·90	63·52	62·37
10	63·50	56·68	50·90	45·50	44·15	47·01	48·67	54·66	58·10	58·32	61·74	60·82
11	62·71	55·85	50·22	44·60	43·70	47·07	47·91	52·95	56·75	56·82	60·69	59·09

(VI.)—HOURLY VARIATION IN FORCE OF WIND.

HOUR.	1858.										1859.	
	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	JANUARY.	FEBRUARY.
Midnight	1·06	1·44	1·6	2·0	2·2	3·08	2·86	1·97	2·0	1·84	2·15	1·7
1	1·03	1·23	1·5	1·8	2·35	2·8	2·8	1·99	1·98	1·5	2·15	1·6
2	0·98	1·3	1·7	2·1	2·4	3·0	2·8	1·98	1·9	1·5	2·43	1·4
3	1·20	1·3	1·9	2·2	2·5	3·05	2·6	1·98	1·88	1·5	2·45	1·38
4	1·13	1·3	1·7	1·97	3·0	2·85	2·7	2·01	1·7	1·55	2·09	1·6
5	1·1	1·5	1·84	2·1	2·8	2·87	2·6	2·00	1·7	1·7	2·0	1·7
6	1·15	1·6	1·76	2·1	2·8	2·7	2·6	2·22	1·93	1·7	1·71	1·68
7	1·34	1·43	1·87	1·85	2·7	2·7	2·9	2·45	2·45	2·34	1·98	1·94
8	1·3	1·8	1·95	1·9	2·7	2·74	3·27	2·61	2·75	2·4	2·13	2·23
9	1·4	1·97	2·0	1·95	2·3	2·7	3·27	2·43	2·8	2·37	2·20	2·54
10	1·6	2·0	2·0	2·35	2·6	2·86	3·4	2·51	2·8	2·15	2·29	2·64
11	1·8	2·2	2·3	2·6	2·7	3·0	3·4	2·53	2·98	2·37	2·58	2·7
Noon	1·93	2·33	2·47	2·85	3·0	3·42	3·1	2·42	3·2	2·45	2·92	3·2
1	2·2	2·4	2·7	2·5	3·0	3·55	2·9	2·60	3·6	2·9	3·03	3·2
2	2·1	2·4	2·63	2·5	2·6	3·4	2·9	2·90	3·3	2·5	3·31	3·43
3	1·9	2·6	2·5	2·3	2·6	3·3	2·7	2·84	2·97	2·7	3·16	3·7
4	2·13	2·4	2·18	2·15	2·5	3·16	2·6	2·74	3·07	3·06	3·21	3·6
5	2·2	2·15	1·84	1·9	2·0	2·87	2·3	2·45	3·07	3·1	3·58	3·2
6	1·95	2·22	1·66	1·7	2·0	2·52	2·2	2·16	2·8	3·3	3·42	3·14
7	1·66	1 85	1·68	1·7	2·3	2·7	2·5	2·58	2·66	2·9	3·10	2·5
8	1·6	1·73	1·8	1·8	2·3	3·42	2·6	2·55	2·67	2·6	3·00	2·1
9	1·4	1·5	1·76	2·1	2·4	3·55	2·83	2·37	2·26	2·48	2·44	2·2
10	1·31	1·47	1·7	2·15	2·6	3·4	2·9	2·13	2·5	2·07	2·34	1·8
11	1·34	1·33	1·97	2·1	2·5	3·3	3·1	2·16	2·25	2·05	2·19	1·7

(VII.)—HOURLY VARIATION IN AMOUNT OF CLOUD.

HOUR.	1858.										1859.	
	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	JANUARY.	FEBRUARY.
Midnight	4·5	5·8	5·27	4·35	5·2	6·82	7·4	4·61	5·5	5·6	6·19	4·63
1	4·55	5·6	5·87	4·95	5·3	7·39	6·85	5·0	5·9	5·7	5·60	4·2
2	4·4	6·45	5·5	4·73	5·9	7·1	6·87	4·13	5·35	5·4	5·81	4·03
3	4·7	6·2	5·35	5·1	6·1	6·76	7·0	5·32	5·25	5·1	5·74	4·14
4	4·7	6·3	6·1	5·3	6·2	7·22	7·1	5·66	5·65	5·15	5·85	5·13
5	5·0	7·06	5·84	5·45	6·2	7·1	7·1	6·3	5·93	5·13	5·85	5·04
6	5·14	7·0	6 36	5·8	5·7	6·92	5·6	6·82	6·4	5·5	6·30	4·91
7	5·0	6·77	6·53	6·1	7·0	6·5	7·0	6·85	8·83	5·4	6·71	5·45
8	5·01	7.12	6·30	5·6	7·3	6·47	6·57	6·55	6·7	5·3	6·88	5 9
9	4·7	7·3	6·4	5·7	6·7	6·26	7·07	6·37	7·0	5·35	5·63	6·4
10	5·0	6·9	6·53	5·87	7·0	6·0	6·98	5·95	6·0	5·35	6·88	5·9
11	5·14	6·2	5·95	5·5	7·0	6·0	7·28	5·76	5·7	5·47	6·78	5·83
Noon	4·6	6·12	6·5	5·4	7·1	6·0	6·8	5·55	5·8	5·0	6·07	5·55
1	4·8	6·0	5·8	5·4	7·5	6·0	6·84	5·27	5·7	4·55	5·6	4·9
2	5·1	5·7	6·6	5·2	7·0	6·3	6·7	4·74	5·3	5·1	6·15	4·9
3	4·9	5·7	6·7	5·2	6·3	6·0	6·75	4·82	5·6	5·3	6·61	5·13
4	4·7	5·57	6·6	6·0	6·3	5·7	7·23	5·10	5·0	5·0	6·40	4·66
5	5·08	5·6	6·7	4·8	7·0	5·24	6·83	4·99	5·7	4·73	5·79	4·75
6	4·9	5·85	6·3	4·3	6·9	5·0	6·7	5·39	5·22	4·56	5·09	4·5
7	4·66	5·42	6·0	4·7	6·3	5·2	6·4	5·29	5·52	4·74	5·20	4·53
8	4·34	4·62	5·1	4·4	6·0	5·5	6·57	5·03	8·02	4·6	5·24	3·6
9	4·6	5·0	4·8	4·3	6·1	6·63	6·66	4·84	6·35	4·5	5·13	2·7
10	4·5	5·05	5·2	4·6	5·3	6·73	6·4	4·80	5·92	4·9	5·32	3·1
11	4·67	5·53	5·14	5·4	5·0	7·28	6·78	4·61	5·97	5·3	5·10	3·2

(VIII.)—HOURLY VARIATION IN ATMOSPHERIC ELECTRICTY.

HOUR.	1858.										1859.	
	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	JANUARY.	FEBRUARY.
Midnight	...	3·557	3·159	2·609	2·739	2·310	2·580	3·180	3·299	3·506	2·477	3·252
1	...	3·170	2·529	2·094	2·201	1·955	2·642	3·275	2·464	3·623	2·355	2·872
2	...	3·128	2·361	2·064	2·066	1·935	2·560	3·350	2·504	2·794	2·288	2·953
3	...	3·312	1·945	2·022	1·849	2·287	2·480	3·096	2·614	3·112	2·680	2·779
4	...	3·347	2·325	1·833	2·103	2·337	2·510	3·260	2·938	3·023	2·483	2·859
5	...	2·646	2·499	2·587	2·349	2·387	2·840	3·521	3·189	3·732	3·083	2·952
6	...	3·113	2·808	2·755	2·780	2·670	3·400	4·731	3·770	4·166	3·919	3·355
7	...	3·985	3·587	3·963	3·577	3·477	4·040	5·269	3·380	4·319	4·052	3·881
8	...	5·203	4·564	5·001	4·341	4·617	3·750	3·964	3·013	4·526	3·495	3·426
9	...	4·400	3·144	4·577	4·343	4·022	2·750	3·043	1·863	3·365	2·666	2·941
10	...	3·727	2·210	4·075	3·542	3·404	2·470	2·524	1·535	2·425	2·928	2·370
11	...	1·943	2·233	3·062	2·840	2·700	2·280	1·880	1·326	2·803	1·799	2·482
Noon	...	2·014	2·082	2·381	2·946	2·442	2·130	2·061	1·492	2·188	1·967	1·746
1	...	1·932	1·891	2·231	1·990	2·051	2·450	1·761	1·022	1·798	1·756	1·508
2	...	0·908	1·579	1·690	2·375	2·177	2·110	1·974	1·293	2·110	1·368	1·291
3	...	1·187	2·108	1·726	1·734	2·130	1·630	1·532	0 821	1·398	0·944	1·739
4	...	1·393	2·728	2·260	2·862	2·327	2·260	1·774	1·124	1·884	1·133	1·404
5	...	2·463	3·486	3·051	3·441	3·368	2·990	2·054	1·577	2·302	1·584	1·650
6	...	3·253	3·515	4·155	4·143	3·455	3·230	3·053	1·919	2·723	2·096	1·746
7	...	4·119	3·130	3·887	3·845	3·486	3·670	3·870	3·410	2·980	2·299	2·498
8	...	3·623	3·469	4·426	3·519	3·253	4·060	3·860	2·872	3·541	2·735	3·377
9	...	3·741	3·698	3·807	3·694	3·026	3·690	4·079	3·208	3·903	3·264	3·533
10	...	4·393	3·124	3·342	3·097	2·656	2·980	4·145	3·017	3·739	3·152	3·355
11	...	4·599	2·884	3·415	3·221	2·357	2·780	3·437	3·316	3·473	2·922	3·209

(IX.)—HOURLY VARIATION IN HOURS OF RAIN.

HOUR.	1858.										1859.	
	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	JANUARY.	FEBRUARY.
Midnight	2·1	0·5	0·9	2·0	2·4	5·8	1·8	0·6	2·8	4·7	0·9	1·4
	2·5	1·35	1·3	3·05	2·0	6·15	2·8	0·0	3·3	4·4	1·4	0·9
2	0·8	1·95	1·5	3·1	3·7	8·6	1·8	0·9	2·3	3·05	2·1	0·0
3	0·5	1·3	1·9	1·5	4·7	5·4	2·25	2·2	1·9	2·5	3·1	0·0
4	1·0	0·5	2·1	1·1	4·3	5·0	2·05	2·4	1·0	2·3	2·0	0·0
5	1·5	0·45	2·55	0·30	2·55	4·05	2·05	1·5	0·7	2·3	2·8	0·2
6	2·0	0·7	2·85	1·85	2·5	4·7	2·2	1·9	1·9	2·6	2·7	0·1
7	0·35	1·7	2·75	1·45	4·1	1·75	1·95	2·7	2·85	4·55	2·5	1·0
8	1·0	2·05	4·15	1·6	4·0	1·8	1·75	2·5	2·7	4·1	2·5	0·3
9	2·0	1·75	0·75	2·0	3·2	2·25	1·3	3·45	2·3	2·6	2·45	0·6
10	2·0	1·3	1·35	2·5	4·85	0·8	2·5	2·5	2·0	3·65	1·0	1·1
11	1·5	1·35	3·2	3·9	3 3	0·6	3·8	1·2	1·21	3·9	0·9	0·5
Noon	1·0	2·15	0·85	2·0	3·7	2·1	2·7	0·4	0·7	3·2	2·1	0·1
1	0·0	0·25	0·95	0·8	2·4	0·9	3·45	0·3	0·65	1·6	2·6	0·3
2	0·0	0·0	1·0	0·55	2·4	2·0	3·2	1·0	0·2	1·4	3·45	0·25
3	1·0	0·1	1·4	0·3	2·85	0·7	5·5	1·0	0·8	2·4	2·5	0·4
4	1·25	0·2	3·8	0·0	3·15	1·7	4·6	1·25	1·3	2·95	1·5	0·8
5	1·1	0·3	4·5	0·5	1·3	1·9	3·3	0·7	0·6	2·5	2·1	0·4
6	1·1	1·1	2·85	1·65	2 35	2·0	3·3	0·7	2·3	2·7	1·4	0·85
7	1:0	0·1	3·1	0·6	1·7	2·5	1·3	1·2	3·0	2·3	1·25	2·3
8	2·5	0·65	1·2	1·0	1·4	2·15	3·2	0·0	4·8	2·3	1·25	0·6
9	1·75	0·0	1·25	3·5	2·8	2·5	4·4	0·1	3·55	2·7	1·8	1·0
10	0·0	1·0	1·25	1·25	2·1	3·4	2·65	0·2	2·7	4·15	1·2	0 8
11	2·25	0·6	1·55	0·9	1·3	4·3	4·0	0·4	2·95	4·4	1·2	0·7

(X.)—DIURNAL CURVE OF THE PRINCIPAL METEOROLOGICAL ELEMENTS FOR THE YEAR ENDING 1ST MARCH, 1859.

HOUR.	TEMPERATURE OF AIR.	PRESSURE OF AIR.	PRESSURE OF VAPOR.	PRESSURE OF DRY AIR.	TEMPERATURE OF SURFACE SOIL.	FORCE OF WIND.	AMOUNT OF CLOUD.	ATMOSPHERIC ELECTRICITY.	HOURS OF RAIN.
Midnight	53·14	29·894	0·361	29·534	52·40	1·99	5·49	2·970	0·071
1	52·56	29·888	0·356	29·532	51·84	1·90	5·58	2·653	0·080
2	52·11	29·883	0·352	29·531	51·21	1·96	5·47	2·542	0·082
3	51·63	29·875	0·349	29·526	50·69	1·99	5·56	2·561	0·075
4	51·30	29·873	0·346	29·527	50·32	1·97	5·86	2·638	0·065
5	51·22	29·878	0·343	29·535	50·25	1·99	6·00	2·890	0·057
6	51·75	29·886	0·344	29·542	51·17	2·00	6·04	3·406	0·073
7	53·37	29·897	0·349	29·548	53·82	2·00	6·51	3·958	0·076
8	55·80	29·906	0·356	29 550	58·86	2·31	6·31	4·173	0·078
9	59·03	29·910	0·367	29·543	65·24	2·33	6·24	3·347	0·068
10	61·75	29·909	0·374	29·535	71·06	2·43	6·19	2·838	0·070
11	63·89	29·902	0·378	29·524	76·19	2·60	6·05	2·304	0·070
Noon	65·03	29·888	0·377	29·511	79·17	2·77	5·88	2·131	0·040
1	65·80	29·873	0·377	29·496	79·71	2·88	5·70	1·846	0·058
2	66·01	29·861	0·377	29 484	79·64	2·83	5·73	1·716	0·042
3	65 02	29·853	0·376	29·477	76 24	2·77	5·75	1·541	0·052
4	63·78	29·850	0·376	29·474	72·16	2·73	5·69	1·922	0·062
5	61·81	29·853	0·377	29·476	66·82	2·55	5·60	2·542	0·052
6	59·88	29·864	0·377	29·487	61·25	2·42	5·39	3·026	0·061
7	58·09	29·877	0·376	29·501	58·48	2·34	5·33	3·381	0·057
8	56·66	29·888	0·374	29·514	56·52	2·35	5·25	3·521	0·058
9	55·59	29·897	0·374	29·523	55·08	2·27	5·13	3·604	0·069
10	54·80	29·900	0·369	29·531	54·17	2·20	5·15	3·364	0·057
11	53·88	29·898	0·364	29·534	53·20	2·16	5·33	3·238	0·067

IV.—WIND.

51. The results of the anemometer in use at the Observatory were not taken into consideration in computing the following values, chiefly because the light winds were not indicated by this instrument with the degree of accuracy required in investigations of so minute a nature. A little weathervane was used, which is placed in a position already described in the Introduction.

52. On examining the wind registrations hour by hour, we find the number of hours during which it blew from each point of the compass, as given in the following table. It was thought advisable to combine, in eight single columns, all the winds between S. and S.E., S.E. and E., E. and N.E., N.E. and N., N. and N.W., N.W. and W., W. and S.W., and S.W. and S., because errors of observation are more likely to occur in determining the direction of the wind when the vane stands at those intermediate points, and the cardinal points will, generally, be too largely represented.

53. NUMBER OF HOURS DURING WHICH THE WIND BLEW FROM EACH POINT OF THE COMPASS.

	S.	Between S. and S.E.	S.E.	Between S.E. and E.	E.	Between E. and N.E.	N.E.	Between N.E. and N.	N.	Between N. and N.W.	N.W.	Between N.W. and W.	W.	Between W. and S.W.	S.W.	Between S.W. and S.
1858.																
March	95	57	43	44	33	56	52	63	43	33	20	21	14	31	43	65
April	55	53	45	42	17	26	70	50	55	31	34	38	37	55	42	54
May	33	47	43	20	18	20	89	134	106	55	49	42	19	20	22	18
1st Quarter ...	183	157	131	106	68	102	211	247	204	119	103	101	70	106	107	137
June	14	11	16	14	10	32	105	146	146	55	23	30	25	46	19	22
July	32	15	15	5	9	10	58	106	159	88	51	34	75	35	22	28
August	35	9	8	2	6	17	76	106	108	62	53	41	63	78	55	19
2nd Quarter ...	81	35	39	21	25	59	239	358	413	205	127	105	163	159	96	69
September ...	32	24	20	3	3	13	29	59	92	76	84	55	84	83	43	17
October	107	55	36	16	6	17	46	62	44	50	32	27	42	49	33	118
November ...	79	60	50	32	19	33	55	59	38	39	17	20	30	54	48	80
3rd Quarter ...	218	139	106	51	28	63	130	180	174	165	133	102	156	186	124	215
December ...	94	67	34	29	24	30	45	28	38	54	38	22	49	62	40	70
1859.																
January	49	80	43	27	9	33	52	60	50	16	24	18	54	42	47	75
February ...	97	41	42	39	13	24	48	38	35	31	16	23	56	56	30	67
4th Quarter ...	240	188	119	95	46	87	145	126	123	101	78	63	159	160	117	212
Sums for the Year ...	722	519	395	273	167	311	725	911	914	590	441	371	548	611	444	633

54. In perusing this table, the number of hours in each period must be taken into consideration: and it must be understood that the months meant here are not taken with regard to the five-day means, and are consequently the civil months, containing the number of hours accordingly. It is the same with regard to the number of hours in each quarter, the two first containing 92 days, the third 90, and the fourth 91.

The number of lost observations during the year are 16 only, and if we distribute these equally over the four quarters we find, from the above tables, that we had in the

1st Quarter	... ...	52 hours of calms,
2nd „	... ...	10 „ „
3rd „	... ...	10 „ „
4th „	... ...	97 „ „

We understand here by "calms" those hours in which no breath of air was perceptible, after having used all possible means of discovering it. The number of hours for the year in which it was absolutely calm amounts to 169.

55. If the figures given in the above table are reduced to their relative values, by dividing the number in each quarter by the smallest number of hours in that quarter, or, for the year, by dividing by the smallest number of hours in the year, we obtain the following results:—

	S.	Between S. and S.E.	S.E.	Between S.E. and E.	E.	Between E. and N.E.	N.E.	Between N.E. and N.	N.	Between N. and N.W.	N.W.	Between N.W. and W.	W.	Between W. and S.W.	S.W.	Between S.W. and S.
1st Quarter ...	2·7	2·3	1·9	1·5	1·0	1·5	3·1	3·6	3·0	1·25	1·5	1·5	1·0	1·6	1·6	2·0
2nd „ ...	3·9	1·7	1·9	1·0	1·2	2·8	11·4	17·0	19·2	9·8	6·0	5·0	7·8	7·5	4·5	3·3
3rd „ ...	7·8	5·0	3·8	1·8	1·0	2·3	4·6	6·4	6·2	5·9	4·8	3.6	5·6	6·7	4·4	7·7
4th „ ...	5·2	4·1	2·6	2·1	1·0	1·9	3·2	2·7	2·7	2·2	1·7	1·4	3·5	3·5	2·5	4·6
Year	4·3	3·1	2·4	1·6	1·0	1·9	4·3	5·5	5·5	3·5	2·6	2·2	3·3	3·7	2·7	3·8

56. The mean directions of the wind for the several months, for each quarter, and for the year, have been computed according to the principles mentioned in the Introduction to this Report, and of which I need give no further explanation.

The mean directions and resultants for each month are as follow:—

	MEAN DIRECTION.	RESULTANT.
1858.	° ′	
March	S. 47 36 E. ...	128·0
April	S. 342 48 E. ...	29·7
May	S. 165 13 E. ...	256·9
June	S. 172 36 E. ...	374·6
July	S. 199 54 E. ...	341·9
August	S. 215 15 E. ...	283·8
September	S. 234 57 E. ...	324·1
October	S. 326 32 E. ...	142·8
November	S. 5 6 E. ...	112·7
December	S. 332 57 E. ...	124·9
1859.		
January	S. 349 13 E. ...	49·2
February	S. 344 23 E. ...	128·4

The following numbers show the values for the quarters:—

	MEAN DIRECTION.	RESULTANT.
	° ′	
1st Quarter	S. 129 45 E. ...	210·4
2nd „	S. 193 31 E. ...	956·8
3rd „	S. 279 40 E. ...	330·2
4th „	S. 342 44 E. ...	297·4

57. The mean direction and resultant for the year have been computed from the results of all the months, from those of the quarters, and directly from the table of frequencies given above, and the results arrived at were found to correspond very well with one another. The following numbers show the mean of the three calculations :—

	DIRECTION.	RESULTANT.
The year ending February, 1859 ...	S. 213°54′ E.	874·0 hours.

The Resultant of all the winds that blew over Melbourne in the course of the year is therefore equivalent to a wind blowing from N. 33°54′ W., with an average force of 2·32, during 874 hours or 36 days.

58. Although results based on the actual measurement of the force or velocity of the wind, have comparatively a much greater value than those derived from merely guessing it, it is, nevertheless a matter of great importance, in the absence of the former, to express the relative force as accurately as possible by the latter method : for this reason the following tables have been compiled.

By simply taking the mean force of the winds for each month, we obtain the following results; expressed according to Beaufort's notation :—

1858.				1858.			
March	...	...	1·48	November	...	...	2·54
April	...	...	1·80	December	...	...	2·32
May	...	...	1·93				
June	...	...	2·07	1859.			
July	...	...	2·65	January	...	...	2·62
August	...	...	3·02	February	...	...	2·35
September	...	...	2·76				
October	...	...	2·39	For the year the mean is		...	2·32

59. The hourly observations on the motions of the weather-vane have been discussed with the view of illustrating Dove's law of the turning of the winds. The principal results in connection therewith are contained in the following tables.

If we call the revolutions of the weather-vane in the sense S.E.N.W.S., *direct;* and those in the sense S.W.N.E.S., *retrograde;* and arrange in their respective columns the number of points through which the vane moved in each direction, we obtain the following remarkable facts.

60. Table showing the excess of Direct revolutions over the Retrograde ones, for each month and quarter :—

	DIRECT REVOLUTION. NO.		DIRECT REVOLUTION. NO.
1858.		1858.	
March ...	9·2	October ...	1·5
April ...	4·2	November ...	3·3
May ...	2·1	December ...	6·2
June ...	2·6		
July ...	3·5	1859.	
August ...	1·8	January ...	4·8
September ...	6·2	February ...	2·8

These figures show the vane to have made 48·2 direct revolutions in excess of the retrograde ; *i.e.* to have moved through 1542·4 points more in the sense S.E.N.W.S. than in the sense S.W.N.E.S.

For the	I. quarter,	March to May	... ...	... 15·5 direct.
„	II. „	June to August	... ...	.. 7·9 „
„	III. „	September to November	...	... 11·0 „
„	IV. „	December to February	...	... 13·8 „

61. These mean directions of the wind have been discussed with one object in view, a more elaborate explanation of which will be given in the description of the diagrams attached.

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62. WINDROSES.

It forms a part of the system adopted at the Flagstaff Observatory, that all the results of observations, made with the various meteorological instruments, are copied and classified according to the direction of the wind. The forms prepared to receive these results contain—columns for pressure of air and vapor, temperature of air, amount of clouds, duration of rain (in hours), force of wind, atmospheric electricity, ozone—and besides these, a column in which is noted the hour at which the observation was made, in order that one might know what correction to apply to the means for the horary variations in each element.

The following tables contain the above mentioned means, for the different elements :—

63. MEAN FORCE OF WIND FOR EACH POINT OF THE COMPASS.

DIRECTION OF WIND.	FOR THE QUARTER.				FOR THE YEAR.	DIRECTION OF WIND.	FOR THE QUARTER.				FOR THE YEAR.
	March. April. May.	June. July. August.	September. October. November.	December. January. February.			March. April. May.	June. July. August.	September. October. November.	December. January. February.	
S.	1·96	1·57	2·32	2·27	2·03	N.	2·18	3·41	3·42	3·48	3·12
S. by E.	2·27	1·25	2·30	2·32	2·04	N. by W.	1·55	2·62	3·15	3·24	2·64
S.S.E.	1·54	1·27	1·88	1·78	1·62	N.N.W.	1·18	2 34	2·83	3·04	2·35
S.E. by S.	1·74	2·25	1·68	1·89	1·89	N.W. by N.	1·44	2·14	2·02	2·11	1·93
S.E.	1·27	1·21	1·89	1·53	1·48	N.W.	1·31	2·05	2·22	2·34	1·98
S.E. by E.	1·20	1·31	1·27	2·15	1·48	N.W. by W.	1·76	2·50	2·55	2·30	2·28
E.S.E.	1·51	1·72	1·34	1·23	1·45	W.N.W.	1·40	2·81	2·22	2·58	2·25
E. by S.	1·22	0·50	1·68	1·09	1·12	W by N.	1·53	2·32	2·50	2·25	2·15
E.	1·02	1·01	1·47	1·18	1·17	W.	1·62	2·50	2·40	2·77	2·32
E. by N.	1·32	2·37	1·17	1·46	1·58	W. by S.	1·81	2·87	2·88	3·10	2·67
E.N.E.	1·32	1·51	1·70	1·13	1·42	W.S.W.	1·77	2·47	2·71	2·78	2·43
N.E. by E.	1·34	1·74	2·04	2·10	1·81	S.W. by W.	2·35	2·93	2·90	2·60	2·70
N.E.	1·48	1·76	1·93	1·80	1·74	S.W.	2·77	2·98	2·88	2·98	2·90
N.E. by N.	1·92	2·43	2·31	2·17	2·21	S.W. by S.	2·28	2·31	3·16	2·60	2·59
N.N.E.	2·03	2·57	3·21	2·52	2·58	S.S.W.	2·12	1·78	3·10	2·99	2·50
N. by E.	2·34	2·94	3·65	3·41	3·09	S. by W.	2·25	2·05	2·38	2·97	2·41

(I.)—MONTHLY MEANS OF TEMPERATURE OF AIR FOR EACH POINT OF THE COMPASS.

DIRECTION OF WIND.	1858.										1859.	
	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.
S.	67·33	62·65	56·67	51·92	47·64	50·65	52·86	59·45	63·77	68·23	67·85	69·10
S. by E.	68·28	62·65	56·26	51·56	46·38	51·24	50·79	60·75	61·93	64·64	64·31	71·35
S.S.E.	63·51	56·91	55·54	51·02	46·20	49·15	52·10	56·95	59·88	63·78	62·47	63·50
S.E. by S.	63·21	60·00	54·23	47·80	46·11	...	50·30	56·17	62·56	59·04	62·35	61·25
S.E.	61·82	56·42	54·35	49·67	44·02	48·45	53·54	55·40	56·57	61·29	61·90	61·00
S.E. by E.	60·89	56·37	56·49	46·56	45·55	51·40	61·86	46·17	58·45	60·10	60·00	57·81
E.S.E.	62·04	58·65	55·00	44·02	43·64	49·60	49·49	53·78	55·10	57·30	59·65	57·40
E. by S.	65·10	59·05	49·67	50·84	49·18	...	...	57·40	62·07	60·80	56·52	54·17
E.	62·67	56·37	53·72	52·03	45·21	53·04	48·32	57·27	62·40	68·14	65·40	56·75
E. by N.	68·23	64·02	47·58	50·25	53·38	53·88	...	56·75	63·16	65·58	77·20	64·97
E.N.E.	64·20	58·67	56·55	49·69	47·64	47·69	52·93	59·31	60·85	63·50	76·55	63·25
N.E. by E.	63·55	53·72	55·94	46·20	42·47	50·55	46·29	61·50	64·94	62·94	72·25	71·25
N.E.	65·49	52·19	50·93	41·85	40·85	46·20	46·25	58·86	59·19	65·05	71·74	67·30
N.E. by N.	66·84	53·31	56·89	46·58	43·62	48·57	48·25	59·40	70·40	67·69	76·55	74·75
N.N.E.	71·04	59·93	53·09	46·68	45·64	51·33	53·31	68·72	67·37	58·81	74·19	75·20
N. by E.	73·61	60·74	57·52	49·15	47·87	52·59	53·06	65·40	68·72	70·70	79·70	70·86
N.	73·07	64·16	56·19	50·64	47·82	52·91	55·79	65·82	72·36	73·72	79·25	72·05
N. by W.	65·13	63·98	52·77	50·05	47·08	54·64	54·06	61·86	80·65	73·60	76·44	69·90
N.N.W.	63·57	56·76	52·37	49·49	48·77	53·09	54·62	56·86	76·00	67·48	68·90	64·85
N W. by N.	59·46	62·49	54·21	47·55	47·87	48·52	50·70	55·40	64·16	62·29	57·85	82·85
N.W.	63·48	57·54	49·94	46·59	47·46	48·23	50·00	50·18	67·31	57·97	63·13	71·74
N.W. by W.	65·67	60·11	52·39	46·97	47·73	47·96	50·64	52·14	64·77	57·99	67·30	55·07
W.N.W.	65·71	59·32	49·99	45·51	44·45	50·34	51·89	51·35	64·90	63·37	70·70	58·75
W. by N.	59·28	59·10	52·95	49·56	46·95	51·83	50·43	49·71	66·08	58·32	67·10	53·45
W.	62·45	57·63	53·99	51·29	47·60	50·37	50·57	50·14	57·57	57·79	60·51	58·44
W. by S.	60·38	58·92	52·86	52·50	49·24	49·49	47·62	54·14	60·07	57·65	61·70	60·35
W.S.W.	67·78	55·52	53·88	51·08	45·66	48·48	49·35	55·49	60·42	58·30	62·60	61·00
S.W. by W.	65·19	57·93	55·38	52·93	45·21	47·67	49·94	54·21	61·46	60·55	65·19	64·60
S.W.	65·87	60·99	53·09	53·83	48·21	50·75	51·47	54·55	58·23	62·47	65·19	62·25
S.W. by S.	62·72	60·69	57·88	52·21	49·15	51·04	53·20	56·19	57·96	65·50	66·95	64·85
S.S.W.	71·45	61·39	53·76	53·00	50·28	53·76	56·53	59·61	62·30	65·95	65·64	70·00
S. by W.	68·64	61·10	56·39	52·80	49·58	52·70	58·35	58·19	62·42	68·65	68·20	67·57

(II.)—MONTHLY MEANS OF PRESSURE OF AIR FOR EACH POINT OF THE COMPASS.

DIRECTION OF WIND.	1858.										1859.	
	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.
S.	29·946	30·062	29·987	30·047	30·077	29·773	29·911	29·987	29·894	29·793	29·887	29·847
S. by E.	29·902	30·110	29·997	30·169	30·109	29·801	29·933	30·037	29·897	29·807	29·844	29·783
S.S.E.	29·989	30·185	29·981	30·185	29·940	29·716	29·937	30·096	29·915	29·789	29·902	29·810
S.E. by S.	30·010	30·167	29·941	30·222	30·138	...	30·096	30·083	29·897	29·773	29·926	29·872
S.E.	29·993	30·131	29·959	30·210	29·994	29·935	29·772	30·085	29·956	29·778	29·853	29·851
S.E. by E.	29·951	30·074	29·901	30·182	29·913	30·015	29·579	30·141	29·921	29·789	29·904	29·936
E.S.E.	29·962	30·068	29·929	30·196	30·110	30·021	29·880	30·006	29·961	29·764	29·789	29·783
E. by S.	29·967	30·186	29·978	30·172	30·134	...	...	30·020	29·765	30·019	29·954	29·850
E.	29·956	30·134	30·037	30·174	29·996	29·634	29·880	30·056	29·741	29·619	29·814	29·887
E. by N.	29·889	30·193	29·768	30·148	30·041	29·624	...	30·306	29·694	29·498	29·720	29·813
E.N.E.	29·929	30·103	30·072	30·147	30·014	29·818	29·621	29·991	29·826	29·676	29·797	29·772
N.E. by E.	29·976	30·064	30·009	30·206	30·104	29·897	29·767	30·053	29·781	29·844	29·800	29·801
N.E.	29·957	30·068	29·929	30·094	30·063	29·898	29·862	29·968	29·821	29·693	29·781	29·797
N.E. by N.	29·884	30·059	29·919	29·969	29·959	29·801	29·879	29·935	29·800	29·767	29·790	29·769
N.N.E	29·869	30·037	29·889	30·020	29·905	29·813	29·686	29·751	29·751	29·709	29·771	29·796
N. by E.	29·958	29·931	29·834	30·031	29·804	29·829	29·664	29·882	29 717	29·590	29·686	29·670
N.	29·956	29·993	29·818	29·972	29·908	29·755	29·715	29·896	29·749	29·629	29·688	29·743
N. by W.	29·892	29·945	29·815	29·968	29·931	29·761	29·765	29·871	29·815	29·661	29·786	29·611
N.N.W.	30·040	29·910	29·896	30·009	29·941	29·770	29·703	29·966	29·738	29·709	29·536	29·683
N.W. by N.	30·046	29·926	29·931	30·016	29·958	29·753	29·669	29·904	29·911	29·774	29·745	29 492
N.W.	30·010	29·950	30·063	29·994	30·004	29·705	29·692	30·005	29·787	29·738	29·692	29·754
N.W. by W.	30·026	29·888	29·910	30·031	29·916	29·681	29·601	29·753	29·856	29·844	29·663	29·756
W.N.W.	29·917	29·913	30·041	29·997	29·879	29·653	29·587	29·962	29·841	29·717	29·629	29·659
W. by N.	29·959	29·939	30·090	30·073	29·994	29·684	29·797	29·909	29·823	29·711	29·694	29·764
W.	29·882	29·893	29·898	30·012	29·974	29·757	29·803	29·923	29·773	29·739	29·712	29·757
W. by S.	29·926	29·976	29·979	30·026	29·982	29·766	29·825	29·861	29·711	29·547	29·721	29·782
W.S.W.	29·942	30·009	29·933	30·094	30·059	29·935	29·774	29·929	29·804	29·634	29·824	29·797
S.W. by W.	29·904	29·964	29·878	30·024	30·025	29·844	29·729	29·950	29·747	29·693	29·783	29·847
S.W.	29·859	30·015	30·001	30·068	30·010	29·775	29·770	30·022	29·809	29·794	29·818	29·778
S.W. by S.	29·910	30·016	30·151	30·052	29·907	29·929	29·752	30·060	29·758	29·738	29·803	29·841
S.S.W.	29·981	30·047	30·040	30·087	30·055	29·758	29·919	30·008	29·880	29·832	29·917	29·789
S. by W.	29·898	30·079	29·880	30·127	30·055	30·018	29·978	30·024	29·900	29·794	29·897	29·818

(III.)—MONTHLY MEANS OF PRESSURE OF VAPOR FOR EACH POINT OF THE COMPASS.

DIRECTION OF WIND.	1858.										1859.	
	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	JANUARY.	FEBRUARY.
S.	0·429	0 381	0·371	0·351	0·277	0·337	0·305	0·352	0·386	0·428	0·461	0·453
S. by E.	0·440	0·391	0·345	0·365	0·289	0·336	0·300	0·345	0·382	0·394	0·448	0·456
S.S.E.	0·407	0·351	0·358	0·324	0·308	0·287	0·293	0·323	0·392	0·439	0·427	0·400
S.E by S.	0 438	0·355	0·360	0·284	0·264	...	0·315	0·334	0·431	0·425	0·423	0·399
S.E.	0·413	0·367	0·381	0·328	0·271	0·314	0·323	0·330	0·372	0·430	0·422	0·398
S.E. by E.	0·409	0·359	0·422	0 302	0·307	0·234	0·338	0·306	0·427	0·414	0·408	0·378
E.S.E.	0·420	0·363	0·347	0·291	0·290	0·215	0·287	0·300	0·369	0·393	0·425	0·389
E. by S.	0·443	0 363	0·337	0·363	0·336	...	...	0·371	0·428	0·396	0·423	0·359
E.	0·431	0·351	0·364	0·323	0·294	0·300	0·307	0·349	0·476	0·491	0·502	0·374
E. by N.	0·460	0·405	0·347	0·304	0·336	0·294	...	0·359	0·498	0·451	0·553	0·400
E.N.E.	0·479	0·357	0·342	0·297	0·306	0·278	0·308	0·370	0·442	0·438	0·576	0·403
N.E. by E.	0·421	0·341	0·375	0·296	0·267	0·271	0·274	0·352	0·460	0·447	0·543	0·471
N.E.	0·457	0·349	0·332	0·271	0·261	0·272	0·286	0·330	0·398	0·446	0·521	0·446
N.E. by N.	0·379	0·354	0·367	0·284	0·273	0·280	0·285	0·341	0·363	0·446	0·526	0·440
N.N.E.	0·414	0·375	0·339	0·287	0·284	0·282	0·298	0·313	0·424	0·435	0·512	0·412
N. by E.	0·420	0·360	0·361	0·286	0·293	0·306	0·272	0·358	0·445	0·489	0·528	0·377
N.	0·420	0·342	0·360	0·297	0·286	0·292	0·303	0·301	0·385	0·468	0·522	0·387
N. by W.	0·413	0·366	0·362	0·304	0·290	0·276	0·303	0·301	0·367	0 456	0·503	0·404
N.N.W.	0·461	0·385	0·353	0·314	0·307	0·292	0·301	0·332	0·408	0·448	0·523	0·385
N.W. by N.	0·431	0·345	0·362	0·320	0·298	0·281	0·302	0·299	0·389	0·414	0·446	0·380
N.W.	0·492	0·366	0·341	0·308	0·284	0·283	0·285	0·321	0·364	0·390	0·430	0·379
N.W. by W.	0·507	0·360	0·352	0·319	0·296	0·283	0·284	0·293	0·399	0·398	0·424	0·334
W.N.W.	0·515	0·380	0·365	0·291	0·267	0·279	0·275	0·320	0·366	0·378	0·418	0·376
W. by N.	0·429	0·377	0·352	0·343	0·292	0·288	0·293	0·316	0·365	0·396	0·415	0·329
W.	0·460	0·375	0·374	0·354	0·292	0·305	0·299	0·301	0·393	0·383	0·423	0·383
W. by S.	0·443	0·373	0·333	0·352	0·293	0·307	0 297	0·300	0·447	0·364	0·452	0 390
W.S.W.	0·425	0·347	0·384	0·365	0·302	0 318	0·297	0·334	0·410	0·364	0·437	0·416
S.W. by W.	0·465	0·392	0·400	0·348	0·313	0·305	0·310	0·352	0·418	0·406	0·454	0·441
S.W.	0·482	0·372	0·322	0·363	0·296	0·313	0·322	0·302	0·390	0·403	0·497	0·424
S.W. by S.	0·437	0·380	0·366	0·353	0·294	0 322	0·271	0·347	0 372	0·422	0·492	0·406
S.S.W.	0·480	0·363	0·346	0·336	0·308	0·372	0·301	0·328	0·379	0·396	0·440	0·468
S. by W.	0·482	0·377	0·353	0·342	0·301	0·304	0·312	0 324	0·380	0·433	0·486	0·424

(IV.)—MONTHLY MEANS OF AMOUNT OF CLOUD FOR EACH POINT OF THE COMPASS.

DIRECTION OF WIND.	1858.										1859.	
	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	JANUARY.	FEBRUARY.
S.	4·97	6 04	5·69	7·00	4·95	5·01	6·83	5·54	4·55	4·05	5·60	4·00
S. by E.	5·02	5·92	7·25	7·50	7·83	6·14	8·47	4·16	4·96	3·00	6·60	4·50
S.S.E.	5·75	5·58	6·60	1·25	5·29	5 00	5·38	4·08	5·50	5·30	6·50	4·80
S.E. by S.	4·85	7·15	6·38	1·50	6·00	...	10·00	5·67	6·50	5·38	6·10	5·40
S.E.	4·87	4·92	6·56	3·13	4·07	4·56	3·95	4·90	4·99	3·90	3·10	4·80
S.E. by E.	6·22	9·26	6·89	3·92	6·00	0·50	4·00	3·00	6·27	5·00	2·20	5·10
E.S.E.	3·11	5·44	6 00	0·50	10·00	1·00	0·00	4·11	3·67	6·15	3·50	5·20
E. by S.	6·20	6·58	6·75	4·50	1·00	...	...	3·38	9·17	3·17	4·90	4·60
E.	4·70	4·91	4·42	2·70	9·72	7·83	3·33	6·25	8·24	4·56	5·60	4·20
E. by N.	6·83	1·60	6·00	2·89	6·67	10·00	...	0·00	9·00	5·50	6·80	3·70
E.N.E.	3·20	1·83	4·88	2·57	5·25	6·40	7·00	0·81	6·69	4·40	5·10	2·00
N.E. by E.	1·53	3·42	7·18	2·78	1·33	4·83	3·88	1·56	7·60	2·30	6·40	2·80
N.E.	3·42	4·91	2·21	3·25	4·94	4·70	4·78	3·05	5·39	5·00	7·00	3·30
N.E. by N.	5·00	5·43	4·90	4·78	4·30	5·57	5·14	3·93	5·00	5·85	7·40	5·30
N.N.E.	5·63	4·97	4·34	4·75	6·68	6·04	6·70	6·97	6·28	3·10	7·60	3·50
N. by E.	4·07	5·78	5·26	4 06	7·09	6·24	6·53	6·02	5·17	6·00	5·70	6·40
N.	4·28	5·00	5 65	6·26	6·44	5·89	6·07	5·12	4·99	5·02	8·20	4·30
N. by W.	4·38	7·00	7·15	7·03	5·24	3·12	7·37	4·20	4·17	5·00	8·90	6·60
N.N.W.	3·63	7·58	7·77	6·06	7·50	5 83	5·37	5·10	4·60	5·82	7·70	6·10
N.W. by N.	1·80	5·67	7·11	7·57	6·15	4·44	8·00	4·90	2·60	3 33	4·80	8·50
N.W	4·80	6·29	6·33	4·96	4·99	6·39	7·39	3·66	5·62	6·40	4·20	3·00
N.W. by W.	3·72	7·43	8·85	2·80	6·21	8·14	8·14	5·60	6·50	3·40	8·50	3·00
W.N.W.	3·43	7·97	8·00	4·13	4·75	5·82	7·44	5·60	4·25	5 80	4 80	4·40
W. by N.	3·00	7·43	9·23	5·80	5·37	7·81	7·06	4·00	6·30	6·95	4·40	4·40
W.	6·14	6·92	8·11	7·66	7·50	7·56	7·92	6·43	7·80	7·20	5·90	7·70
W. by S.	6·85	6·72	8·11	7·45	7·93	8·52	8·29	8·50	7·40	8·27	6·60	7·10
W.S.W.	7·80	8·43	4·10	7·90	8·82	8·92	6·58	7·95	5·03	6·90	9 20	6·10
S.W. by W.	8·33	8·93	8·33	6·30	8·63	8·85	9·46	9·03	7·85	6·00	4·50	6·80
S.W.	7·66	7·96	7·48	7·39	8·02	8·15	8 12	6·71	7·46	4·81	8·10	6·75
S.W. by S.	5·67	6·73	8·50	6·40	5·33	7·36	4·70	6·69	7·22	4·70	5·50	5·30
S.S.W.	2·64	4·50	4·31	3·64	5·68	7·00	3·38	6·69	5·73	4·55	6·60	4·60
S. by W.	5·18	6·59	5·25	5·80	5·75	2·33	5·00	6 17	5·34	3·76	6·30	4·60

(V.)—MONTHLY MEANS OF POSITIVE ELECTRICITY FOR EACH POINT OF THE COMPASS.

DIRECTION OF WIND.	1858.										1859.	
	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	JANUARY.	FEBRUARY.
S.	...	1·51	2·12	2·86	4·30	3·14	3·20	2·34	1·93	2·49	2·22	2·06
S. by E.	...	2·43	2·81	4·49	5·26	3·62	3·44	2·68	2·33	2·87	3·06	2·37
S.S.E.	...	3·60	2·68	4·67	3·82	3·07	3·58	3·59	3·48	3·34	3·80	3·06
S.E. by S.	...	3·13	1·88	3·27	...	...	5·33	4·04	3·29	4·61	3·27	3·41
S.E.	...	3·87	1·34	4·13	4·66	5·90	3·75	4·34	3·48	4·30	3·68	3·01
S.E. by E.	...	2·25	1·42	3·47	2·19	5·24	2·94	5·79	4·16	4·15	4·32	3·53
E.S.E.	...	4·13	2·05	3·74	7·02	7·57	7·19	5·69	4·58	4·09	4·60	4·50
E. by S.	...	3·24	2·35	2·55	6·59	...	...	6·01	3·29	4·21	4·69	4·98
E.	...	3·20	0·65	4·34	5·85	3·72	6·74	5·06	3·91	3·48	2·75	4·38
E. by N.	...	1·85	3·89	3·71	4·64	0·73	...	7·29	4·38	4·47	2·83	3·80
E.N.E.	...	3·59	1·69	3·82	7·49	4·35	2·86	3·88	3·32	3·34	1·73	3·77
N.E. by E.	...	2·89	1·92	4·59	5·35	3·04	4·13	3·77	3·04	3·19	3·11	1·90
N.E.	...	3·31	2·44	4·34	5·25	3·19	5·39	3·30	2·76	3·27	2·43	2·08
N.E. by N.	...	2·88	1·95	3·55	4·66	2·76	3·88	2·86	1·59	2·71	1·54	3·09
N.N.E.	...	2·36	1·69	2·86	2·77	2·96	2·85	2·65	2·02	3·52	1·28	1·66
N. by E.	...	2·51	2·10	2·62	1·42	2·93	2·70	2·23	1·82	1·19	1·52	0·50
N.	...	2·47	1·68	2·04	1·86	2·12	2·50	2·99	1·41	2·00	1·78	2·33
N. by W.	...	3·84	1·30	2·48	2·97	2·14	2·60	4·21	1·35	1·67	1·65	2·20
N.N.W.	...	3·56	1·92	3·35	2·76	2·56	2·70	3·73	1·69	2·10	1·77	2·09
N.W. by N.	...	3·31	2·04	4·53	2·66	2·62	2·54	2·96	2·42	3·83	2·01	...
N.W.	...	2·15	2·39	3·25	2·22	2·47	2·75	3·38	1·64	2·73	2·59	3·29
N.W. by W.	...	2·39	2·24	2·64	1·86	1·85	1·77	3·84	1·36	4·17	1·36	2·88
W.N.W.	...	2·56	1·69	2·90	3·73	2·11	1·86	3·07	2·19	3·72	1·35	1·79
W. by N.	...	3·79	2·62	...	3·62	2·64	2·43	2·79	1·07	2·35	2·13	2·82
W.	...	2·51	1·98	2·21	2·78	2·12	3·83	2·80	2·06	2·97	2·34	2·75
W. by S.	...	0·62	2·66	2·21	2·74	2·34	2·58	2·51	1·86	3·80	1·27	2·58
W.S.W.	...	...	1·82	1·17	3·46	1·97	3·11	2·82	1·31	2·90	1·70	3·08
S.W. by W.	...	2·80	1·11	2·14	2·36	2·29	2·40	3·09	1·88	4·20	3·15	3·05
S.W.	...	2·56	2·61	2·74	4·13	2·63	2·81	3·44	2·33	3·78	2·66	3·53
S.W. by S.	...	2·86	1·47	3·89	3·92	4·87	2·26	2·96	1·68	4·25	1·96	2·97
S.S.W.	...	1·00	1·81	3·80	4·47	3·51	4·47	2·45	1·80	2·76	2·42	1·98
S. by W.	...	1·35	2·53	2·78	4·79	3·01	4·09	2·27	1·81	1·82	2·11	2·31

(VI.)—YEARLY MEANS OF THE DIFFERENT METEOROLOGICAL ELEMENTS FOR EACH POINT OF THE COMPASS.

DIRECTION OF WIND.	TEMPERATURE OF AIR.	PRESSURE OF AIR.	PRESSURE OF VAPOR.	PRESSURE OF DRY AIR.	FORCE OF WIND.	AMOUNT OF CLOUD.	POSITIVE ELECTRICITY.
S.	59·84	29·934	0·378	29·556	2·03	5·35	2·56
S. by E.	59·18	29·949	0·374	29·575	2·04	5·95	3·21
S.S.E.	56·75	29·954	0·359	29·595	1·62	5·09	3·52
S.E. by S.	56·64	30·011	0·366	29·645	1·86	5·41	3·58
S.E.	55·37	29·960	0·362	29·598	1·48	4·48	3·86
S.E. by E.	55·14	29·942	0·359	29·583	1·48	4·86	3·59
E.S.E.	53·81	29·956	0·341	29·615	1·45	4·06	5·01
E. by S.	56·48	30·005	0·382	29·623	1·13	5·03	4·21
E.	56·78	29·911	0·380	29·531	1·17	5·54	4·01
E. by N.	60·46	29·899	0·367	29·532	1·62	5·36	3·76
E.N.E.	58·40	29·897	0·383	29·514	1·42	4·18	3·62
N.E. by E.	57·63	29·942	0·377	29·565	1·80	3·80	3·36
N.E.	55·49	29·911	0·364	29·547	1·74	4·33	3·43
N.E. by N.	59·41	29·878	0·361	29·517	2·21	5·22	2·86
N.N.E.	60·44	29·833	0·365	29·468	2·58	5·55	2·42
N. by E.	62·50	29·800	0·375	29·425	3·08	5·61	1·96
N.	63·65	29·819	0·364	29·455	3·12	5·60	2·11
N. by W.	62·51	29·819	0·362	29·457	2·64	5·85	2·40
N.N.W.	59·40	29·825	0·376	29·449	2·35	6·09	2·57
N.W. by N.	57·78	29·844	0·355	29·489	1·93	5·41	2·89
N.W.	56·13	29·866	0·353	29·513	1·98	5·34	2·62
N.W. by W.	55·73	29·827	0·354	29·473	2·28	6·02	2·40
W.N.W.	56·36	29·816	0·353	29·463	2·25	5·53	2·45
W. by N.	55·40	29·870	0·350	29·520	2·15	5·98	2·43
W.	54·86	29·844	0·362	29·482	2·32	7·24	2·38
W. by S.	55·41	29·842	0·363	29·479	2·66	7·64	2·20
W.S.W.	55·80	29·886	0·367	29·519	2·43	7·31	2·33
S.W. by W.	56·69	29·864	0·384	29·488	2·70	7·75	2·19
S.W.	57·24	29·893	0·374	29·519	2·90	7·38	3·02
S.W. by S.	58·20	29·910	0·372	29·538	2·59	6·18	3·01
S.S.W.	60·31	29·943	0·376	29·567	2·50	4·94	2·77
S. by W.	60·38	29·956	0·377	29·579	2·41	5·17	2·62

64. From the tables of the means of the different meteorological elements for each point of the compass windroses have been constructed, for the pressure of air, temperature of air, pressure of dry air, pressure of vapor, and positive atmospheric electricity.

In computing these values the results were again reduced to sixteen points of the compass, all those observations having been combined which lay between S. and S.E., S.E. and E., E. and N.E., N.E. and N., N. and N.W., N.W. and W., W. and S.W., and S.W. and W. By this means, the errors arising from an inequality in the number of observations on different points of the compass are, to some extent, eliminated; the rest of the method of calculation is identical with that given by M. Kaemtz in his "Complete Course of Meteorology."

65. These "cards" have been made up for the quarters and the year. Tables containing the number of hours during which the wind blew from each point of the compass were used in bringing the relative frequency of the winds into consideration.

66. BAROMETRIC WINDROSE.

DIRECTION OF WIND.	FOR THE QUARTER.				FOR THE YEAR.
	March, April, May.	June, July, August.	September, October, November.	December, January, February.	
S.	29·989	29·972	29·917	29·839	29·930
Between S. and S.E.	30·022	30·050	29·968	29·841	29·957
S.E.	30·028	30·044	29·957	29·828	29·954
Between S.E and E.	30·003	30·088	29·920	29·854	29·945
E.	30·028	29·960	29·825	29·747	29·896
Between E. and N.E.	29·990	30·023	29·838	29·746	29·880
N.E.	29·983	30·010	29·859	29·771	29·914
Between N.E. and N.	29·929	29·897	29·783	29·726	29·839
N.	29·902	29·878	29·786	29·684	29·821
Between N. and N.W.	29·933	29·899	29·802	29·716	29·843
N.W.	30·017	29·906	29·803	29·739	29·865
Between N.W. and W.	29·966	29·871	29·774	29·724	29·837
W.	29·874	29·924	29·846	29·734	29·854
Between W. and S.W.	29·941	29·970	29·824	29·731	29·867
S.W.	29·942	29·936	29·860	29·800	29·885
Between S.W. and S.	29·981	29·998	29·923	29·829	29·928

67. ATMIC WINDROSE.

DIRECTION OF WIND.	FOR THE QUARTER.				FOR THE YEAR.
	March, April, May.	June, July, August.	September, October, November.	December, January, February.	
S.	0·389	0·316	0·349	0·451	0·375
Between S. and S.E.	0·384	0·319	0·345	0·420	0·361
S.E.	0·387	0·303	0·332	0·414	0·357
Between S.E. and E.	0·382	0·310	0·357	0·398	0·354
E.	0·381	0·307	0·398	0·466	0·382
Between E. and N.E.	0·395	0·294	0·399	0·475	0·388
N.E.	0·376	0·268	0·338	0·471	0·361
Between N.E. and N.	0·378	0·286	0·346	0·468	0·364
N.	0·384	0·292	0·335	0·463	0·365
Between N. and N.W.	0·388	0·297	0·336	0·440	0·365
N.W.	0·390	0·288	0·328	0·400	0·353
Between N.W. and W.	0·401	0·292	0·324	0·385	0·355
W.	0 401	0·307	0·335	0·396	0·357
Between W. and S.W.	0·393	0·320	0·352	0·413	0·370
S.W.	0·399	0·319	0·339	0·442	0·374
Between S.W. and S.	0·402	0·323	0·336	0·440	0·371

68. WINDROSE FOR DRY AIR.

DIRECTION OF WIND.	FOR THE QUARTER.				FOR THE YEAR.
	March, April, May.	June, July, August.	September, October, November.	December, January, February.	
S.	29·600	29·656	29·568	29 388	29·555
Between S. and S.E.	29·637	29·731	29·622	29·421	29·596
S.E.	29·641	29·741	29·625	29·414	29·597
Between S.E. and E.	29·621	29·778	29·563	29·456	29·591
E.	29·647	29·653	29·427	29·281	29·514
Between E. and N.E.	29·596	29·728	29·439	29 270	29·492
N.E.	29·607	29·742	29·521	29·300	29·553
Between N.E. and N.	29·551	29·611	29·437	29·258	29·476
N.	29·518	29·586	29·451	29·221	29·456
Between N. and N. W.	29·545	29·602	29·466	29 276	29·478
N.W.	29·627	29·618	29·475	29·339	29·512
Between N.W. and W.	29·565	29·579	29·449	29·342	29·482
W.	29 473	29 617	29·511	29·338	29·497
Between W. and S.W.	29·548	29·649	29·473	29·318	29·497
S.W.	29·543	29·617	29·521	29·358	29·511
Between S.W. and S.	29·579	29·675	29·587	29·389	29·557

69. THERMOMETRIC WINDROSE.

DIRECTION OF WIND.	FOR THE QUARTER.				FOR THE YEAR.
	March, April, May.	June, July, August.	September, October, November.	December, January, February.	
S.	62·03	49·40	58·73	68·93	60 07
Between S. and S.E.	60·06	48·36	56·49	63·19	56·82
S.E.	57·53	47·63	53·97	61·27	54·86
Between S.E. and E.	57·93	47·67	54 74	57·80	53·94
E.	57·30	50·10	56 56	65·02	56·79
Between E. and N.E.	59·70	49·16	58·34	68·46	58 99
N.E.	55·94	43·04	55·03	68·09	54·95
Between N.E. and N.	61·52	48·08	61·66	73·00	59 85
N.	63·59	50·37	63·77	75·26	61·90
Between N. and N.W.	58·88	49·36	60 77	68·50	59·35
N.W.	56·69	47·38	55·21	62·67	55 55
Between N.W. and W.	58·40	47·88	55·74	60·76	55·92
W.	58·25	49·09	53·83	58·89	54·79
Between W. and S.W.	58·14	48·86	54·70	61·39	55 64
S.W.	60·28	50·07	54·71	63·34	56·94
Between S.W. and S.	61·60	51·54	57·31	66·91	59·08

70. ELECTRIC WINDROSE.

DIRECTION OF WIND.	FOR THE QUARTER.				FOR THE THREE QUARTERS.
	MARCH, APRIL, MAY.	JUNE, JULY, AUGUST.	SEPTEMBER, OCTOBER, NOVEMBER.	DECEMBER, JANUARY, FEBRUARY.	
S.	...	3·64	2·35	2·24	2·51
Between S. and S.E.	...	4·21	3·44	3·33	3·46
S.E.	...	4·46	3·91	3·64	3·88
Between S.E. and E.	...	3·70	4·73	4·39	4·42
E.	...	4·71	4·66	3·52	4·14
Between E. and N.E.	...	3·99	4·04	3·19	3·62
N.E.	...	4·12	3·60	2·58	3·55
Between N.E. and N.	...	3·11	2·46	1·84	2·71
N.	...	1·99	2·31	2·01	2·06
Between N. and N.W.	...	2·84	2·68	2·37	2·68
N.W.	...	2·60	2·63	2·73	2·64
Between N.W. and W.	...	2·63	2·30	2·62	2·48
W.	...	2·55	3·13	2·69	2 79
Between W. and S.W.	...	2·21	2·43	2·93	2·50
S.W.	...	3·03	2·82	3·26	3·05
Between S.W. and S.	...	3·98	2·41	2·45	2 66

71. In the description of the Diagrams I have alluded to some facts derivable from investigations similar to those of which I have just treated, by the construction of curves representing the main features of the above tables. One can scarcely lay too much stress upon the value of labors of this kind, and it may be safely asserted that we can only secure the proper discussion of such an enormous quantity of observations by at once reducing and classifying them, as is at present done in this observatory, for otherwise, they would in a short time accumulate to such an extent that the very idea of reducing them would almost dishearten one.

72. Before closing the chapter on the winds, and their effect on the various meteorological instruments, I should have liked to insert some results of the investigations that are being conducted here, concerning the storms, &c., on this coast; but I have refrained from so doing, being convinced that the results will be much more satisfactory and definite when the observations, from which they are reduced, shall have extended over a more protracted period.

V.—AQUEOUS METEORS.

73. If I denotes the intensity of rain, D its duration, and A the amount collected, the following formula express a relation between these quantities, $I = \frac{A}{D}$.

According to this formula the values for the intensity, which appear in the following table, have been computed.

It was stated in the introduction, that the amounts of rain have been invariably measured at 6 P.M. and at 6 A.M., and the figures given under the heads "day and night," represent the amounts collected during twelve hours.

The intensity column shows the intensity of rain for day and night, as well as the mean value. This mean value is also expressed in units of the lowest intensity in the month of June.

As in March, 1858, the standard raingauge had not been in working order, no observations could be made with regard to the fall of rain in night and day, and consequently the column for intensity could not be filled up; for the completion of the observations in this month the amount of rain was used, which was collected at the late Meteorological Observatory at the Crown Lands Office.

74. RAIN TABLE FOR THE YEAR ENDING 1ST OF MARCH, 1859.

PERIODS.	AMOUNT.			NUMBER OF HOURS.			INTENSITY.			
	DAY.	NIGHT.	TOTAL.	DAY.	NIGHT.	TOTAL.	DAY.	NIGHT.	MEAN.	
1858.	Inches.	Inches.	Inches.							June = 1.
March ...	0·545	0·545	1·090	13·80	17·75	31·55	...	...	3·45	2·23
April ...	0·270	0·274	0·544	12·25	9·10	21·35	2·2	3·0	2·60	1·68
May	0·829	0·418	0·247	25·30	22·35	47·65	3·3	1·9	2·60	1·68
1st Quarter ...	1·644	1·237	2·881	51·35	49·20	100·55	2·75	2·45	2·88	1·86
June	0·439	0·248	0·687	21·90	22·65	44·55	2·0	1·1	1·55	1·00
July	1·069	0·799	1·868	36·80	35·50	72·30	3·0	2·2	2·60	1·68
August ...	0·796	0·663	1·459	24·25	49·50	73·75	3·3	1·4	2·35	1·52
2nd Quarter ...	2·304	1·710	4 014	82·95	107·65	190·60	2 77	1·57	2·17	1·40
September ...	1·339	0·621	1·960	32·70	26·50	59·20	4·1	2·4	3·25	2·10
October ...	0·659	0·124	0·783	17·35	11·65	29·00	3·8	1·1	2·45	1·58
November ...	1·207	1·674	2·881	17·41	30·40	47·81	6·9	5·5	6·20	4·00
3rd Quarter ...	3·205	2·419	5·624	67·46	68·55	136·01	4·93	3·00	3·97	2·56
December ...	2·974	2·868	5·842	34·55	38·50	73·05	8·6	7·5	8·05	5·19
1859.										
January ...	1·979	0 603	2·582	24·80	21·90	46·70	8·0	2·8	5·40	3·48
February ...	0·283	0·463	0·746	7·25	9·20	16·45	3·9	5·0	4·45	2·87
4th Quarter ...	5·236	3·934	9·170	66·60	69·60	136·20	6·83	5·10	5·97	3·85
YEAR ...	12·389	9·300	21·689	268·36	295·00	563·36	4·32	3·28	3·80	2·45

75. Particular attention has been paid to the relation between the duration of rain and the direction of wind. The following tables contain the results arrived at:—Table 76 shows the number of hours of rain for each point of the compass for each month; and Table 77, the number of hours of rain for the directions of the wind stated in the first column, (*vide* Description of Diagrams).

76. NUMBER OF HOURS OF RAIN FOR EACH POINT OF THE COMPASS FOR EACH MONTH.

DIRECTION OF WIND.	1858.										1859.	
	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	January.	February.
S.	1·00	0·95	6·15	0·25	0·85	7·20	1·00	3·00	1·60	4·24	0·30	0·10
S. by E.	0·00	0·10	0·90	0·00	1·00	1·10	1·90	0·85	0·00	0·00	1·00	0·00
S.S.E.	1·00	0·50	0·80	0 00	1·00	0·00	0·00	0·00	0·30	1·20	1·70	0·25
S.E. by S.	0·00	0·10	0·35	0·00	0·10	...	0·00	0·20	0·00	2·00	1·40	0·00
S.E.	0·00	2·15	7·40	0·00	1·10	0·00	0·45	0·40	5 65	3·85	2·10	0·90
S.E. by E.	0·75	1·25	0·00	0·00	0·50	0·00	0·00	0·00	2·40	0·10	0·00	1·50
E.S.E.	1·50	0·10	0·50	0·00	1·00	0·00	0·00	0·00	0·00	1·00	0·00	0·40
E. by S.	1·00	0·00	0·50	0·00	0·00	...	...	0·00	0·10	0·00	0·50	0·00
E.	2·00	0·75	0·35	0·00	2·70	0·20	0·00	0·00	3·05	2·50	0·00	0·00
E. by N.	3·35	0·00	0·00	0·00	0·00	0·10	...	0·00	1·70	0·40	0·00	0·00
E.N.E.	1·50	0·00	0·00	0·00	0·20	0 00	1·80	0·00	3·20	1·50	0·60	0·00
N.E. by E.	1·00	0·25	0·30	0·00	0·00	0·00	0·25	0·00	1·50	1·10	1·20	0·00
N.E.	4·35	3·05	1·35	3·10	5·55	1·30	0·55	0·30	4·70	7·00	6·35	0·10
N.E. by N.	0·00	2·50	0·00	2·70	1·20	3·20	0·50	0·00	0·50	1·00	1·10	1·00
N.N.E.	0·75	0·00	2·00	0·50	1·70	1·05	3·20	0·10	2·21	1·50	5·40	0·50
N. by E.	0·00	1·50	1·25	2·00	2·10	0·00	0 00	0·10	2·50	1·00	1·00	1·00
N.	0·00	0·00	4·75	9·45	10·45	6·90	6·10	0·50	0·80	3·00	2·87	0·50
N. by W.	0·00	0·00	0·95	0·75	2·20	0·05	0·50	0·00	1·00	1·75	3·20	0·30
N.N W.	0 00	0 00	1·25	0·25	4·60	2·10	1·10	0 00	2·50	5·20	0·00	0·20
N.W. by N.	0·00	0·00	0·75	0·25	0·70	0·70	1·25	0 50	0·80	0·50	0·00	0·00
N.W.	0·00	0·10	2·80	1·10	2·45	4·15	3·70	0·10	0·00	4·10	4·20	0·00
N.W. by W.	0·00	0·00	1·00	0·25	2 50	0·20	0·30	1·00	0·50	0·00	0·00	0·00
W.N.W.	0·00	0·00	1·45	0·00	1·00	0·90	2·25	0·30	0·00	1·00	0·50	0·00
W. by N.	0·00	0·20	2·25	0 00	0·80	0·80	1·65	0·00	0·00	0·30	0·20	0·00
W.	0·10	0·85	3·75	2·90	13·40	11·45	13.50	2·10	3·50	6·85	2·40	3 45
W. by S.	2·00	0·85	1·20	0·00	0·60	8·75	8·65	2·05	0·95	7·40	2·20	0·70
W.S.W.	0·00	0·70	0·45	6·00	4·10	7·80	4·00	2·00	0·65	7·20	1·95	0·70
S.W. by W.	1·25	0·70	1·60	1·35	2·00	4·55	2·45	3·40	0·30	0·90	0·20	0·50
S.W.	3·00	3·35	1·95	1 75	6·15	5·70	12·15	3·00	3·65	1·70	4·45	1·50
S.W. by S.	2·00	0·20	0·25	0·25	1 50	0·20	0·40	1·50	0·10	0 50	1·00	0·00
S.S.W.	0·00	0·20	0·25	0·30	0·40	7·80	0·20	4·70	1·20	1·05	1·30	0·40
S. by W.	1·25	1 00	1·05	0 00	1·00	0·00	0·00	3·00	0·30	0·00	2·50	0·20

77. YEARLY NUMBER OF HOURS OF RAIN FOR EACH POINT OF THE COMPASS.

DIRECTION OF WIND.	HOURS OF RAIN.	DIRECTION OF WIND.	HOURS OF RAIN.
S.	26·64	N.	45·32
Between S. and S.E.	17·75	Between N. and N.W.	33·35
S.E.	24·00	N.W.	22·70
Between S.E. and E.	13·10	Between N.W. and W.	19·35
E.	11·55	W.	64·25
Between E. and N.E.	19·95	Between W. and S.W.	90·10
N.E.	37·70	S.W.	48·35
Between N.E. and N.	45·06	Between S.W. and S.	36·00

78. NUMBER OF HOURS OF DEW DURING EACH MONTH.

MONTH.	HOURS.
1858—	
March	79·05
April	59·16
May	85·80
June	118·55
July	44·90
August	28·00
September	22·10
October	65·80
November	39·50
December	45·05
1859—	
January	40·80
February	46·90
Hours of Dew during the Year	675·61

79. NUMBER OF HOURS OF FOG DURING EACH MONTH.

MONTH.	HOURS.
1858—	
March	3·00
April	12·33
May	26·25
June	56·70
July	19·50
August	32·00
September	13·45
October	4·00
November	0·75
December	3·00
1859—	
January	1·00
February	11·20
Hours of Fog during the Year	183·18

80. SIMULTANEOUS OBSERVATIONS WITH HYGROMETERS OF AUGUST AND DÖBEREINER-REGNAULT, MADE DURING THE MONTHS OF JANUARY AND FEBRUARY, 1859.

DATE.	TIME.	TEMPERATURE OF		
		Air.	Evaporation.	Dewpoint.
1859.		°	°	°
January 2 ...	11 a.m.	70·3	64·6	57·5
„ 2 ...	1 p.m.	70·9	64·2	56·5
„ 2 ...	9 p.m.	61·0	56·5	51·7
„ 3 ...	6 a.m.	59·5	54·1	48·3
„ 3 ...	3 p.m.	70·3	63·7	57·5
„ 3 ...	6 p.m.	66·4	63·1	59·2
„ 4 ...	Midnight	58·6	57·0	52·5
„ 4 ...	3 a.m.	56·5	54·5	51·3
„ 4 ...	6 a.m.	59·9	56·3	51·0
„ 4 ...	3 p.m.	71·6	62·2	52·5
„ 4 ...	6 p.m.	67·3	60·4	53·0
„ 5 ...	3 a.m.	54·7	51·8	47·2
„ 5 ...	6 a.m.	57·2	53·8	48·7
„ 6 ...	7 a.m.	65·8	61·7	54·7
„ 6 ...	Noon	74·8	67·1	59·6
„ 6 ...	3 p.m.	76·6	68·5	61·6
„ 6 ...	9 p.m.	67·1	64·9	57·0
„ 7 ...	8 a.m.	74·1	66·7	58·2
„ 7 ...	Noon	76·8	69·1	61·4
„ 7 ...	3 p.m.	72·1	67·6	52·7
„ 7 ...	6 p.m.	67 1	63·5	58·5
„ 8 ...	Midnight	65·1	61·5	55·2
„ 8 ...	3 a.m.	62·4	62·4	60·7
„ 8 ...	9 a.m.	62·8	60·4	56·0
„ 8 ...	Noon	66·4	62·4	55·3
„ 8 ...	3 p.m.	68·0	62·8	57·5
„ 8 ...	6 p.m.	65·5	62·2	58·1
„ 9 ...	3 a.m.	59·9	59·5	58·0
„ 9 ...	6 a.m.	62·4	60·8	58·8
„ 9 ...	9 a.m.	73·4	66·2	59·8
„ 9 ...	Noon	78·4	70·0	62·0
„ 9 ...	3 p.m.	70·0	67·1	63·9
„ 9 ...	6 p.m.	64·9	64·2	63·5
„ 9 ...	9 p.m.	63·5	63·3	61·5
„ 10 ...	6 a.m.	60·8	55·4	47·4
„ 10 ...	9 a.m.	65·3	55·9	41·3
„ 10 ...	Noon	66·0	55·0	43·4
„ 10 ...	3 p.m.	64·0	56·7	49·1
„ 10 ...	6 p.m.	62·6	57·7	53·0
„ 10 ...	9 p.m.	58·1	55·0	51·3
„ 11 ...	6 a.m.	55·9	53·4	50·2
„ 11 ...	9 a.m.	59·9	55·4	49·9
„ 11 ...	Noon	60·6	57·0	52·5
„ 11 ...	3 p.m.	60·1	55·2	50·2
„ 11 ...	6 p.m.	59·7	55·6	49·2
„ 12 ...	Midnight	56·3	52·0	47·0
„ 12 ...	6 a.m.	54·3	54·3	53·3
„ 12 ...	9 a.m.	60·8	57·4	53·7
„ 12 ...	Noon	68·9	61·3	52·0
„ 12 ...	3 p.m.	67·6	59·9	51·7
„ 13 ...	3 a.m.	52·7	51·6	49·0
„ 13 ...	6 a.m.	57·7	54·7	50·7
„ 13 ...	9 a.m.	63·5	57·0	50·1

DATE.	TIME.	TEMPERATURE OF		
		Air.	Evaporation.	Dewpoint.
1859.		°	°	°
January 13 ...	Noon	68·7	59·7	49·8
„ 13 ...	3 p.m.	66·2	59·0	52·1
„ 13 ...	6 p.m.	64·0	57·4	50·4
„ 13 ...	9 p.m.	59·0	54·5	50·8
„ 14 ...	7 a.m.	60·6	57·4	53·2
„ 14 ...	9 a.m.	68·2	61·5	54·8
„ 14 ...	Noon	75·9	67·1	59·8
„ 14 ...	6 p.m.	85·1	70·5	58·3
„ 14 ...	9 p.m.	75·7	66·2	60·3
„ 15 ...	Noon	86·9	68·2	51·5
„ 15 ...	3 p.m.	86·0	66·9	49·7
„ 15 ...	6 p.m.	80·2	65·5	50·2
„ 15 ...	9 p.m.	71·4	65·1	58·7
„ 16 ...	Midnight	68·9	64·6	60·8
„ 16 ...	3 a.m.	65·9	64·2	62·3
„ 16 ...	6 a.m.	65·1	63·5	62·5
„ 16 ...	9 a.m.	70·5	66·2	63·3
„ 16 ...	Noon	76·8	69·6	63·5
„ 16 ...	3 p.m.	78·4	70·7	65·0
„ 16 ...	6 p.m.	79·9	70·9	63·1
„ 17 ...	3 a.m.	62·8	60·6	57·0
„ 17 ...	6 a.m.	63·3	58·6	53·1
„ 17 ...	9 a.m.	72·1	64·6	55·4
„ 17 ...	Noon	78·6	70·3	62·1
„ 17 ...	6 p.m.	80·8	72·1	63·5
„ 17 ...	9 p.m.	67·6	65·5	62·5
„ 18 ...	8 a.m.	70·3	59·9	47·2
„ 18 ...	9 a.m.	70·5	59·2	49·3
„ 18 ...	Noon	75·0	59·5	44·3
„ 18 ...	9 p.m.	63·1	54·7	45·7
„ 18 ...	6 p.m.	72·7	58·1	40·9
„ 19 ...	6 a.m.	56·8	52·5	47·7
„ 19 ...	9 a.m.	64·9	57·4	49·2
„ 19 ...	Noon	65·5	61·0	56·6
„ 19 ...	3 p.m.	63·7	58·8	54·1
„ 19 ...	6 p.m.	60·8	56·3	51·6
„ 20 ...	Midnight	58·6	54·1	48·4
„ 20 ...	3 a.m.	57·7	50·9	43·8
„ 20 ...	6 a.m.	56·8	51·4	44·2
„ 20 ...	Noon	66·4	58·8	50·4
„ 20 ...	3 p.m.	67·6	58·8	48·6
„ 20 ...	6 p.m.	62·4	58·1	48·5
„ 21 ...	3 a.m.	52·7	52·0	48·3
„ 21 ...	6 a.m.	55·6	53·6	49·8
„ 21 ...	9 a.m.	66·9	59·9	51·6
„ 21 ...	Noon	71·4	63·1	53·9
„ 21 ..	6 p.m.	70·3	64·4	59·2
„ 21 ...	9 p.m.	65·3	64·0	61·6
„ 22 ...	6 a.m.	60·8	59·0	56·9
„ 22 ...	9 a.m.	81·1	68·2	58·7
„ 22 ...	Noon	87·8	70·5	59·0
„ 22 ...	3 p.m.	93·0	72·1	56·4
„ 22 ...	6 p.m.	88·3	70·0	56·3

SIMULTANEOUS OBSERVATIONS WITH THE HYGROMETERS OF AUGUST AND DÖBEREINER-REGNAULT, MADE DURING JANUARY AND FEBRUARY, 1859—*continued.*

DATE.	TIME.	TEMPERATURE OF		
		Air.	Evaporation.	Dewpoint.
1859.		°	°	°
JANUARY 22 ...	9 p.m.	79·3	68·2	59·5
„ 23 ...	6 a.m.	80·4	66·4	56·3
„ 23 ...	9 a.m.	80·6	65·1	51·5
„ 23 ...	Noon	86·5	68·2	52·4
„ 24 ...	Midnight	73·0	65·5	60·5
„ 24 ...	3 a.m.	70·7	64·0	58·5
„ 24 ...	6 a.m.	69·8	64·4	58·2
„ 24 ...	Noon	94·3	73·9	58·7
„ 24 ...	3 p.m.	96·4	73·4	55·3
„ 24 ...	6 p.m.	88·0	70·5	58·7
„ 25 ...	Midnight	74·5	68·5	64·5
„ 25 ...	3 a.m.	71·8	65·1	58·3
„ 25 ...	6 a.m.	70·5	66·0	61·6
„ 25 ...	9 a.m.	73·2	68·9	62·9
„ 25 ...	Noon	77·2	72·5	66·5
„ 25 ...	3 p.m.	75·9	70·0	61·5
„ 25 ...	6 p.m.	77·0	74·3	66·3
„ 25 ...	9 p.m.	70·5	67·1	63·2
„ 26 ...	6 a.m.	70·5	67·8	65·0
„ 26 ...	9 a.m.	74·5	69·6	65·8
„ 26 ...	Noon	69·4	68·7	67·5
„ 26 ...	3 p.m.	63·5	62·8	62·5
„ 26 ...	6 p.m.	61·9	61·3	59·3
„ 26 ...	9 p.m.	56·5	55·9	54·5
„ 27 ...	6 a.m.	51·8	50·0	46·4
„ 27 ...	9 a.m.	56·8	54·5	53·5
„ 27 ...	Noon	64·9	55·9	45·4
„ 27 ...	4 p.m.	66·7	57·2	48·8
„ 27 ...	6 p.m.	64·2	57·2	49·8
„ 28 ...	Midnight	53·6	50·0	45·4
„ 28 ...	3 a.m.	51·8	49·6	44·2
„ 28 ...	6 a.m.	51·8	49·8	46·8
„ 28 ...	9 a.m.	65·3	57·7	50·3
„ 28 ...	Noon	69·1	59·2	45·6
„ 28 ...	3 p.m.	72·3	59·5	43·4
„ 28 ...	6 p.m.	66·9	57·7	45·1
„ 29 ...	7 a.m.	60·8	57·2	52·1
„ 29 ...	9 a.m.	66·0	59·5	51·7
„ 29 ...	Noon	72·1	61·9	52·5
„ 29 ...	3 p.m.	71·8	61·5	53·5
„ 29 ...	6 p.m.	64·9	59·2	53·8
„ 29 ...	9 a.m.	62·2	58·6	54·3
„ 30 ...	Midnight	59·9	55·9	52·9
„ 30 ...	3 a.m.	58·1	53·6	48·6
„ 30 ...	6 a.m.	59·2	54·3	48·2
„ 30 ...	9 a.m.	66·9	59·5	52·8
„ 30 ...	Noon	72·1	63·3	54·3
„ 30 ...	6 p.m.	66 0	58·1	50·3
„ 30 ...	9 p.m.	58·1	54·1	48·9
„ 31 ...	9 a.m.	63·3	56·8	48·9
„ 31 ...	Noon	72·1	60·4	48·9
„ 31 ...	3 p.m.	74·5	63·5	52·5
„ 31 ...	6 p.m.	73·0	62·2	51·5

DATE.	TIME.	TEMPERATURE OF		
		Air.	Evaporation.	Dewpoint.
1859.		°	°	°
FEBRUARY 1 ...	Midnight	56·8	55·0	49·5
„ 1 ...	3 a.m.	53·6	52·9	51·0
„ 1 ...	6 a.m.	54 5	53·6	49·5
„ 1 ...	Noon	69·6	62·4	56·2
„ 1 ...	3 p.m.	71·8	64·0	57·0
„ 1 ...	6 p.m.	69·6	63·1	57·5
„ 2 ...	3 a.m.	58·6	56·8	54·5
„ 2 ...	6 a.m.	58·3	57·0	53·9
„ 2 ...	9 a.m.	70·0	63·3	55·5
„ 2 ...	Noon	74·3	65·5	57·6
„ 2 ...	6 p.m.	74·8	68·2	60·5
„ 2 ...	9 p.m.	68·9	65·1	60·0
„ 3 ...	7 a.m.	71·8	62·8	52·8
„ 3 ...	9 a.m.	79·0	64·4	53·0
„ 3 ...	Noon	89·8	70·3	54·5
„ 3 ...	3 p.m.	92·1	71·3	54·8
„ 3 ...	6 p.m.	89·3	70·5	55·5
„ 3 ...	9 p.m.	79·0	68·0	56·3
„ 4 ...	6 a.m.	67·3	62·2	57·4
„ 4 ...	9 a.m.	87·8	70·3	56·3
„ 4 ...	Noon	85·8	68·7	55·5
„ 4 ...	3 p.m.	80·8	72·3	65·5
„ 4 ...	6 p.m.	72·5	68·2	55·4
„ 5 ...	Midnight	65·1	63·7	62·0
„ 5 ...	3 a.m.	64·9	64·2	62·4
„ 5 ...	7 a.m.	66·9	65·5	62·0
„ 5 ...	Noon	91·2	77·2	69·9
„ 5 ...	3 p.m.	98·8	74·3	56·0
„ 5 ...	6 p.m.	93·0	73·4	61·0
„ 6 ...	Midnight	73·6	68·0	62·5
„ 6 ...	3 a.m.	70·5	66·2	63·3
„ 6 ...	6 a.m.	80·2	66·0	56·5
„ 6 ...	9 a.m.	92 1	70·5	54·3
„ 6 ...	9 p.m.	76·1	67·3	58 6
„ 7 ...	7 a.m.	66·0	61·0	55·1
„ 7 ...	9 a.m.	69·8	63·5	56·5
„ 7 ...	Noon	74·1	63·7	55·6
„ 7 ...	3 p.m.	74·8	64·2	54·2
„ 7 ...	6 p.m.	67·8	61·5	55·1
„ 7 ...	9 p.m.	61·3	58·3	54·5
„ 8 ...	9 a.m.	69·4	60·4	51·6
„ 8 ...	Noon	74·1	61·3	49·2
„ 8 ...	3 p.m.	72·1	61·3	50·5
„ 8 ...	6 p.m.	67·6	59·2	49·5
„ 9 ...	Midnight	60·1	54·1	47·5
„ 9 ...	3 a.m.	55·6	51·4	47·5
„ 9 ...	6 a.m.	55 6	50·2	45·9
„ 9 ...	Noon	64·4	56 3	48·5
„ 9 ...	3 p.m.	63·1	55·0	50·2
„ 9 ...	6 p m.	55·6	54·1	49·5
„ 9 ...	9 p.m.	53·6	49·3	43·7
„ 10 ...	Midnight	50·2	48·2	47·0
„ 10 ...	3 a.m.	47·5	46·6	43·4

SIMULTANEOUS OBSERVATIONS WITH THE HYGROMETERS OF AUGUST AND DÖBEREINER-REGNAULT, MADE DURING JANUARY AND FEBRUARY, 1859—*continued.*

DATE.	TIME.	TEMPERATURE OF			DATE.	TIME.	TEMPERATURE OF		
		Air.	Evaporation.	Dewpoint.			Air.	Evaporation.	Dewpoint.
1859.		°	°	°	1859.		°	°	°
February 10 ...	6 a.m.	50·5	48·2	45·4	February 21 ...	6 a.m.	59·2	56·8	54·5
„ 10 ...	Noon	65·3	57·0	47·0	„ 21 ...	Noon	72·1	61·3	49·5
„ 10 ...	3 p.m.	67·3	59·0	49·0	„ 21 ...	3 p.m.	61·5	58·6	54·4
„ 10 ...	6 p.m.	63·3	55·0	44·8	„ 21 ...	6 p.m.	58·3	55·4	51·6
„ 10 ...	9 p.m.	55·6	54·3	45·2	„ 21 ...	9 p.m.	57·0	52·7	48·6
„ 11 ...	9 a.m.	68·2	55·2	39·3	„ 22 ...	Midnight	55·2	50·5	45·5
„ 11 ...	Noon	75·0	57·4	37·5	„ 22 ...	3 a.m.	54·1	51·1	46·7
„ 15 ...	6 p.m.	61·7	54·7	46·6	„ 22 ...	6 a.m.	53·8	51·8	47·5
„ 15 ...	9 p.m.	55·9	52·7	50·0	„ 22 ...	6 p.m.	60·6	56·3	51·5
„ 16 ...	6 a.m.	49·8	49·8	48·5	„ 22 ...	9 p.m.	58·3	55·4	53·3
„ 16 ...	9 a.m.	58·3	54·3	50·3	„ 24 ...	Midnight	56·5	54·7	52·0
„ 17 ...	3 a.m.	49·8	48·4	46·4	„ 24 ...	3 a.m.	55·9	54·3	52·9
„ 17 ...	6 a.m.	50·9	48·9	46·5	„ 24 ...	6 a.m.	57·0	53·8	50·5
„ 17 ...	3 p.m.	69·4	61·5	53·5	„ 24 ...	9 a.m.	61·7	55·2	47·8
„ 17 ...	6 p.m.	69·8	57·9	50·4	„ 24 ...	Noon	66·7	57·7	48·8
„ 18 ...	7 a.m.	52·0	50·0	45·9	„ 24 ...	3 p.m.	64·6	57·4	50·0
„ 18 ...	9 a.m.	63·1	58·8	49·3	„ 24 ...	6 p.m.	60·1	54·1	47·3
„ 18 ...	Noon	75·0	63·3	47·5	„ 24 ...	9 p.m.	55·6	50·9	42·5
„ 18 ...	3 p.m.	78·4	63·1	44·4	„ 25 ...	6 p.m.	65·8	59·0	44·3
„ 18 ...	9 p.m.	63·7	57·9	50·6	„ 25 ...	9 p.m.	59·0	54·7	45·4
„ 19 ...	Midnight	59·9	55·9	50·5	„ 27 ...	Midnight	51·8	48·0	42·4
„ 19 ...	6 a.m.	57·9	54·3	43·7	„ 27 ...	3 a.m.	47·8	45·3	40·4
„ 19 ...	9 p.m.	72·1	60·8	49·8	„ 27 ...	6 a.m.	46·6	44·2	39·7
„ 20 ...	9 a.m.	81·1	64·6	50·5	„ 27 ...	9 a.m.	60·4	53·6	42·7
„ 20 ...	3 p.m.	90·3	68·0	49·5	„ 27 ...	Noon	65·5	57·4	46·9
„ 20 ...	6 p.m.	83·3	64·6	48·5	„ 27 ...	4 p.m.	65·3	58·6	50·3
„ 20 ...	9 p.m.	75·7	63·1	49·0	„ 27 ...	6 p.m.	62·2	56·5	49·7
„ 20 ...	11 p.m	65·1	62·8	60·5	„ 28 ...	6 a.m.	48·2	46·0	42·7
„ 21 ...	Midnight	62·8	59·9	58·3	„ 28 ...	9 a.m.	63·3	56·5	48·5
„ 21 ...	3 a.m.	60·6	56·5	55·5	„ 28 ...	6 p.m.	81·1	64·4	43·9

VI.—OZONE.

81. The manner and nature of the instrument by which the observations on Ozone have been carried on throughout the year ending 1st March, 1859, have been described in the introduction, and there is little to add for the explanation of the following tables.

The first contains the results of observations made on the ozonic reaction, the papers having been exposed through three, six, and twelve hours, and furnish a means by which conclusions may be drawn as to the diurnal variations in this element, as to the ratio of ozonic action, and the multiplied time of exposure.

82. The results obtained from this complete plan of observations do not appear to lead to distinct conclusions with regard to the horary variations in the ozonic reaction; however, they have been made with great care and precaution, and deserve all confidence. The means deduced from the four months—November, 1858, to February, 1859—turn out more determined, as can be seen by inspecting the respective tables.

83. TABLE SHOWING THE VARIATIONS IN THE AMOUNT OF OZONE FOR THE PERIODS OF THREE, SIX, AND TWELVE HOURS, FOR THE MONTHS OF NOVEMBER AND DECEMBER, 1858, AND JANUARY AND FEBBUARY, 1859.

MONTHS.	PERIODS.	Amount of Ozone Paper exposed during			Ratio of the Ozonic Reaction during 3, 6, and 12 Hours.
		3 Hours.	6 Hours.	12 Hours.	
November ...	6 a.m. — 9 a.m.	1·12			
„ ...	9 a.m. — Noon	0·87	2·05		
„ ...	Noon — 3 p.m.	0·88			*Means for November.*
„ ...	3 p.m. — 6 p.m.	0·71	1·35	2·85	3h. 6h. 12h.
„ ...	6 p.m. — 9 p.m.	0·85			0·92 1·89 3·46
„ ...	9 p.m. — Midn.	1·05	2·00		
„ ...	Midn. — 3 a.m.	1·03			
„ ...	3 a.m. — 6 a.m.	0·83	2·14	4·07	
December ...	6 a.m. — 9 a.m.	0·83			
„ ...	9 a.m. — Noon	0·71	1·36		
„ ...	Noon — 3 p.m.	0·85			*Means for December.*
„ ...	3 p.m. — 6 p.m.	0·86	1·60	2·70	3h. 6h. 12h.
„ ...	6 p.m. — 9 p.m.	0·56			0·72 1·40 2·82
„ ...	9 p.m. — Midn.	0·72	1·09		
„ ...	Midn. — 3 a.m.	0·56			
„ ...	3 a.m. — 6 a.m.	0·63	1·55	2·93	
January ...	6 a.m. — 9 a.m.	0·62			
„ ...	9 a.m. — Noon	0·82	1·46		
„ ...	Noon — 3 p.m.	0·90			*Means for January.*
„ ...	3 p.m. — 6 p.m.	1·02	1·90	2·69	3h. 6h. 12h.
„ ...	6 p.m. — 9 p.m.	0·90			0·82 1·58 2·94
„ ...	9 p.m. — Midn.	0·82	1·42		
„ ...	Midn. — 3 a.m.	0·82			
„ ...	3 a.m. — 6 a.m.	0·68	1·52	3·19	
February ...	6 a.m. — 9 a.m.	1·05			
„ ...	9 a.m. — Noon	0·70	1·50		
„ ...	Noon — 3 p.m.	0·98			*Means for February.*
„ ...	3 p.m. — 6 p.m.	0·85	1·66	2·50	3h. 6h. 12h.
„ ...	6 p.m. — 9 p.m.	0·66			0·88 1·64 2·95
„ ...	9 p.m. — Midn.	0·97	1·80		
„ ...	Midn. — 3 a.m.	0·90			
„ ...	3 a.m. — 6 a.m.	0·90	1·60	3·40	
Means for the Four Months	... ...	...	...	...	3h. 6h. 12h. 0·84 1·63 3·04

84. MEAN DIURNAL VARIATION IN THE OZONIC REACTION ON PAPER, EXPOSED THREE, SIX, AND TWELVE HOURS, DERIVED FROM OBSERVATIONS MADE DURING NOVEMBER, DECEMBER, 1858, AND JANUARY AND FEBRUARY, 1859.

PERIODS.	3 Hours.	6 Hours.	12 Hours.
6 a.m. — 9 a.m.	0·91		
9 a.m. — Noon	0·78	1·59	
Noon — 3 p.m.	0·90		
3 p.m. — 6 p.m.	0·86	1·63	2·69
6 p.m. — 9 p.m.	0·74		
9 p.m. — Midnight ...	0·89	1·58	
Midnight — 3 a.m.	0·88		
3 a.m. — 6 a.m.	0·76	1·70	3·40

85. MEAN AMOUNT OF OZONE FOR EACH MONTH.

MONTHS.	AMOUNT OF OZONE.		
	Day.	Night.	Mean.
1858.			
March	3·32	4·17	3·75
April	3·90	4·17	4·04
May	3·98	3·75	3·87
June	2·62	3·71	3·17
July	4·17	4·56	4·37
August	3·48	3·95	3·72
September	3·00	4·27	3·64
October	2·44	3·62	3·03
November	3·00	4·11	3·56
December	2·60	3·16	2·88
1859.			
January	2·78	3·18	2·98
February	2·27	3·32	2·80
Means for the Year ...	3·13	3·83	3·49

86. An ozonic wind-card has been constructed, by simply taking the means of the different observations for each wind, which means will be found in Table 87. It must be mentioned, however, that the observations had to be divided into two classes, inasmuch as they were registered at different hours, in different parts of the year, as below stated. In the period from March to October, 1858, observations were only made at intervals of twelve hours each, viz., from six a.m. to six p.m., but in that from November, 1858, to February, 1859, in addition to the twelve-hourly ones above mentioned, there were others made at intervals of three and six hours, which were used in compiling the following tables. In order to obtain a more comprehensive view of the relations between wind and ozone, the figures have been divided by the smallest quantity in each column and multiplied by ten, so that they express only relative values.

87. MONTHLY MEANS OF OZONE FOR EACH POINT OF THE COMPASS.

DIRECTION OF WIND.	1858.										1859.	
	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	JANUARY.	FEBRUARY.
S.	3·50	2·83	...	...	5·33	...	...	1·98	1·00	0·81	1·00	0·90
S. by E.	3·33	...	...	...	...	...	...	0·67	0·74	0·92	0·90	0·80
S.S.E.	...	5·25	4·50	...	...	...	...	1·67	0·60	0·60	1·35	0·57
S.E. by S.	4·90	...	...	...	...	...	...	1·00	0·75	0·12	0·90	0·00
S.E.	2·67	4·20	3·25	...	3·00	...	2·67	2·50	0·90	0·23	0·56	0·94
S.E. by E.	...	...	5·33	...	...	...	4·00	2·00	0·00	0·75	0·70	0·60
E.S.E.	7·75	...	6·00	...	...	...	...	...	0·50	0·38	0·20	...
E. by S.	...	...	...	...	3·00	...	...	...	0·25	...	0·30	0·10
E.	5·00	...	...	...	...	...	...	3·67	0·40	0·18	0·20	0·20
E. by N.	1·75	...	3·00	...	...	...	...	...	0·25	0·50	0·30	0·25
E.N.E.	3·00	...	...	1·25	...	...	...	...	0·40	0·80	0·20	0·00
N.E. by E.	...	1·50	...	0·00	...	...	...	1·50	1·07	0·00	0·30	0·25
N.E.	3·50	3·17	3·25	3·34	3·50	3·83	2·50	2·00	0·25	0·41	0·30	0·40
N.E. by N.	2·00	...	2·50	2·75	...	...	...	1·00	0·12	0·00	0·60	0·17
N.N.E.	1·75	...	5·67	2·75	...	1·00	2·50	...	0·86	0·70	0·30	0·40
N. by E.	3·75	4·00	2·00	1·67	6·50	3·00	...	1·33	1·57	0·50	0·60	0·50
N.	3·50	3·00	3·38	2·73	4·80	2·67	3·43	1·25	0·42	0·50	0·50	0·40
N. by W.	...	...	...	...	...	...	3·50	1·50	0·57	0·60	0·80	1·00
N.N.W.	...	4·50	...	...	...	...	...	1·00	0·17	0·65	1·70	0·10
N.W. by N.	...	...	...	...	4·00	...	...	5·00	...	0·40	0·30	0·50
N.W.	...	5·00	4·33	3·00	...	5·33	5·25	5·00	0·50	1·17	0·90	0·50
N.W. by W.	...	...	...	4·50	...	...	...	4·00	1·50	1·50	0·70	1·10
W.N.W.	...	...	4·50	4·67	...	...	...	4·00	2·00	1·00	0·70	0·00
W by N.	...	...	...	...	5·75	...	4·00	...	0·25	0·70	1·00	1·10
W.	...	5·75	...	...	4·00	...	5·50	6·00	1·70	0·94	1·20	1·27
W. by S.	...	5·00	...	...	...	...	6·00	4·50	1·60	2·75	1·20	1·33
W.S.W.	...	...	...	...	...	...	4·50	4·00	1·75	1·88	1·50	1·55
S.W. by W.	...	5·00	...	...	...	...	...	2·00	1·80	1·00	1·60	2·10
S.W.	...	...	...	3·50	...	...	...	2·33	2·33	1·28	1·50	2·30
S.W. by S.	...	4·00	...	...	...	...	...	3·75	1·00	0·70	1·10	1·83
S.S.W.	...	...	...	...	...	...	...	1·75	1·67	0·94	1·13	0·60
S. by W.	...	...	...	...	...	...	...	3·20	1·77	1·21	1·10	0·94

88. OZONIC WINDROSE.

DIRECTION OF WIND.	MARCH TO OCTOBER, 1858.	NOVEMBER, 1858, TO FEBRUARY, 1859.
S.	20	37
Between S. and S.E.	18	28
S.E.	18	26
Between S.E. and E.	27	16
E.	25	0
Between E. and N.E.	0	14
N.E.	18	13
Between N.E. and N.	17	21
N.	18	18
Between N. and N.W.	19	25
N.W.	27	31
Between N.W. and W.	26	38
W.	31	51
Between W. and S.W.	26	67
S.W.	17	74
Between S.W. and S.	19	47

VII.—PHENOMENON OF HALOS.

89. The phenomenon of Halos was carefully observed throughout the year, and the slighest traces of a solar or lunar halo were entered in the registers. It was not so much the measurements of the diameters to which particular attention has been paid, as the fact of their occurrence and that of other simultaneous phenomena. The probability of the connection between Meteorology and Magnetism will soon be established or rejected through investigations of this nature, and the tables given here will prove valuable for those interested in the matter when compared with the results of magnetic observations and the Aurora Australis, as given in the third part of this report, viz., on Terrestrial Magnetism.

Coronas and other phenomena of a similar nature have not been mentioned here, but will be found in the Monthly Abstracts.

90. REGISTER OF ALL THE HALOS SEEN THROUGHOUT THE YEAR ENDING 1st MARCH, 1859.

DATE.	HALOS. Hours when Visible. A.M.	S. or M.	P.M.	Diameter. ° ′	REMARKS.
1858.					
March 1	3	M.	11		
„ 3	...	M.	10 & 11	42 30	Result of several measurements.
„ 4	Mid. & 1	M.			
„ 5	...	M.	11		
„ 7	Mid. to 5	M.			
„ 8	2 & 3	M.			
„ 28	Mid.	M.	8		
April 1	...	M.	8		
„ 6	1	M.			
„ 10	...	S.	4	48 0	Aurora Australis.
„ 26	...	M.	8		
„ 27	...	M.	8		
„ 29	4	M.			
May 5	3	M.			
„ 8	3	M.			
„ 8	...	S.	3	...	Great magnetic storm.
„ 9	...	S.	3		
„ 20	...	M.	6		
„ 23	1	M.	6		
„ 24	...	M.	5 to 10		
„ 25	4	M.			
„ 27	2 to 4	M.			
„ 29	2	M.	11		
„ 30	...	M.	9		
„ 31	Mid. to 4	M.			
June 1	2	M.			
„ 2	1, 3, 4	M.			
„ 4	5	M.	...	...	Aurora Aust. & magnets disturbed
„ 8	10h. 50m.	S.			
„ 16	Noon	S.			
„ 17	10	S.			
„ 17	...	M.	10	43 0	
„ 18	...	S.	2 to 5		
„ 18	...	M.	6 to 9		
„ 20	...	S.	1		
„ 21	...	M.	7 & 11		
„ 22	Mid. to 3	M.	7		
„ 23	1	M.	...	...	Magnets disturbed & Aurora Australis.
„ 24	Mid. to 4	M.	7 & 9 to 11		
„ 24	9 to Noon	S.			
„ 25	Mid. to 3	M.	6 to 11	43 40	Result of several measurements.
„ 25	8h. 45m.	S.			
„ 26	Mid. to 1	M.	8 & 10		
„ 26	...	S.	Noon to 2		
„ 27	...	M.	8 & 11		
„ 28	...	S.	Noon	...	Magnets disturbed.
„ 29	3	M.			
July 9	10 & 11	S.			
„ 20	...	M.	6		
„ 26	Mid. & 2	M.			

DATE.	HALOS. Hours when Visible. A.M.	S. or M.	P.M.	Diameter. ° ′	REMARKS.
1858.					
Aug. 1	Noon	S.	1	...	Magnets disturbed.
„ 17	...	M.	8		
„ 18	...	M.	7		
„ 26	2	M.	...	...	Magnets disturbed.
Sept. 19	...	S.	1	...	Aurora Australis.
„ 21	...	M.	11	...	Aurora Australis.
„ 22	Mid., 1 & 2	M.			
Oct. 13	...	M.	9		
„ 18	Mid.	M.	8		
„ 19	...	M.	10		
„ 23	1 & 3	M.	...	...	Magnets disturbed with more or less vehemency until the 28th.
„ 26	...	S.	3 & 5		
„ 27	Mid., 1 & 4	M.			
„ 28	...	S.	4		
„ 29	...	S.	1		
Nov. 5	9 & 10	S.	5		
„ 19	Mid.	M.	10		
„ 20	Mid. & 1	M.			
„ 20	Noon	S.	1, 5, & 6	45 0	
„ 21	...	M.	11		
„ 22	10	S.			
„ 26	...	S.	1 to 3		
Dec. 11	Noon	S.	2 & 3		
„ 17	...	S.	1	...	Magnets slightly disturbed.
„ 22	...	M.	11		
„ 23	Mid. & 5	M.	...	50 0	Aurora Australis.
„ 24	...	S.	3	...	Aurora Australis.
„ 25	Mid. & 1	M.	...	...	Aurora Australis.
„ 25	...	S.	3		
„ 26	...	M.	1		
1859.					
Jan. 1	...	S.	2 to 6		
„ 2	10 to 12	S.	1		
„ 7	11	S.	3		
„ 16	...	S.	6	...	Disturbance in the magnets.
„ 22	...	S.	2 to 3		
„ 24	3h. 15m.	M.			
„ 26	2 & 3	M.			
„ 28	1	M.			
Feb. 3	...	S.	3 & 5		
„ 13	...	S.	6 to 7		
„ 13	...	M.	9 to 11		
„ 14	9 to 12	S.	1	...	Aurora Australis.
„ 18	...	M.	10		
„ 22	Mid., 1 & 3	M.	...	...	Aurora Australis.
„ 27	...	S.	3	...	Aurora Australis.
„ 28	...	M.	3		

VIII.—THE ZODIACAL LIGHT.

90. Particular attention was paid to this interesting phenomenon, and whenever an opportunity offered itself, observations were made with a view to ascertain the limits of the luminous column, by tracing them upon a good map of stars. The number of days on which complete and reliable observations could be taken, has not been as great as we might expect from the geographical position of this country and the brightness of the sky; but it may be stated here, that the cirro stratus veil, so peculiar to our climate, greatly interfered with these interesting investigations, and frequently when the light of the phenomenon was very intense, the upper extremity of the column, and its limits, could not be registered with any degree of accuracy. Great precaution was taken that the eye of the observer should not be affected by surrounding lights, or by brilliant stars, whenever an accurate determination of the position of its boundaries was intended.

91. I fully agree with the view of Dr. Julius Schmidt, one of the most experienced observers in this matter, when he states that every observer of the zodiacal light will most probably trace its limits differently, according to the sensitiveness of his eye, and his own experience; but at the same time I believe that an observer can arrive at very good results, after having decided upon a particular part as the limits of the phenomenon. When observing under favorable circumstances, I was frequently induced to believe, that I could clearly discern an inner and an outer phenomenon, so much so that I have had to alter the outlines several times before I could confine them to the compass which I generally adopt.

92. The following is an extract from the register which was kept during the years 1858–59, containing an enumeration of the days when the zodiacal light was visible, as well as the more accurate observations on its position:—

March the 6th at 7 p.m. The zodiacal light was visible in the west, not very well defined on account of a thin veil of clouds.

March the 16th at 4 a.m. The zodiacal light was not very bright, although the upper extremity could be seen with some certainty in an altitude of 60°. The greatest width of the column, did not exceed 7° 30′

March the 23rd at 4 a.m. The zodiacal light very bright.

March the 27th at 4 a.m. The zodiacal light very intense; but the base was enveloped in a bank of heavy clouds.

March the 28th at 5 a.m. The zodiacal light visible.

April the 19th at 4·45 a.m. The zodiacal light very bright, but cirri did not admit of any accurate observations.

April the 22nd at 5 a.m. The zodiacal light visible.

April the 25th at 5 a.m. The zodiacal light visible, but sky not very clear.

April the 26th at 4·30 a.m. The zodiacal light very bright.

May the 17th at 4 a.m. The zodiacal light very bright, but diffused on account of the cirro cumulus clouds.

May the 15*th at* 5·15 *a.m.* The sky was perfectly clear, and the zodiacal light splendidly visible. The upper extremity was near a point situated in a line connecting λ Aquarii and Deneb Knitos about three-eighths of the whole distance from the latter star. The southern edge was well defined, while the northern was more difused. The results of the observations are as follow :—

		SOUTHERN.	NORTHERN LIMITS.
AR	355°	d = — 12°.5 ...	... — ——
„	360°	d = — 11°.5 ...	... — ——
„	15°	d = — 7°.0 ...	... + 7°.0
„	25°	d = — 3°.0 ...	... + 10°.0
„	30°	d = — 2°.0 ...	... + 20°.0
„	35°	d = — 1°.0 ...	... + 27°.0

June the 3*rd at* 8 *p.m.* The zodiacal light visible on the western horizon.

June the 4*th at* 7 *p.m.* The zodiacal light visible on the western horizon.

June the 10*th at* 5 *a.m.* The zodiacal light very fine, but too many cirri scattered about.

June the 14*th at* 7 *p.m.* The zodiacal light only faintly visible, although the sky was perfectly clear during the evening.

June the 17*th at* 5 *p.m.* The zodiacal light visible. The sky was exceedingly bright, and the intensity of the light very great. The upper extremity was near φ Ceti, and the Pleiades appeared like a small bright cloud, near the axis of the column of light. The southern edge was very well defined, but the northern one imperfectly so.

		SOUTHERN.	NORTHERN LIMITS.
AR	10°	d = — 7°.0	— ——
„	15°	d = — 5°.0 ...	... + 3°.0
„	20°	d = — 3°.0 ...	... + 10.°0
„	25°	d = 0°.0 ...	... + 15°.0
„	30°	d = + 4°.0 ...	... + 22°.0
„	40°	d = + 11.°0 ...	... — ——

June the 18*th at* 5 *a.m.* The zodiacal light pretty clear.

June the 30*th at* 6 *p.m.* Traces only of the Zodiacal light visible, although the sky was very clear.

July the 2*nd at* 8 *p.m.* Sky clear, with a few cirri scattered about; zodiacal light but faintly visible.

July the 4*th at* 7 *p.m.* The zodiacal light was tolerably bright, but the limits could not be laid down with any degree of certainty. The upper extremity appeared near σ and χ Leonis, at 7·10 p.m. Venus was near the base of the column towards the northern edge.

July the 6*th at* 7 *p.m.* The zodiacal light faintly visible though the sky was rather clear.

July the 11*th at* 8·15 *p.m.* The zodiacal light distinctly visible, the upper extremity appeared near 22 and 14 Crateri.

July the 13*th at* 2·15 *a.m.* At this early hour traces of the zodiacal light could be recognised.

July the 13*th at* 6·30 *p.m.* The sky had an extraordinary appearance. In the W.N.W. horizon rose a narrow stripe of dark clouds, gradually extending over three-fourths of the sky, and forming an angle of 40 degrees, within the milky way; the zodiacal light was clearly visible at the base of this cloud; soon afterwards the sky became quite overcast.

July the 22*nd at* 4 *a.m.* Beautiful clear night; the zodiacal light visible.

August the 3rd. The zodiacal light was exceedingly bright, and its southern edge was defined with great sharpness; notwithstanding a slight haze which overspread the sky, the splendour of the luminous column was so great that a distinct reflection of it was visible in the waters of the swamp. The brilliancy of Venus, situated near the northern edge of the phenomenon, interfered greatly with the exact determination of its limits.

The following table gives the results of observations made at 6·50 p.m.

		SOUTHERN EDGE.	NORTHERN EDGE.
AR	203°		
„	200°	$d = -10°.5$ ...	...
„	195°	$d = -14°$ ...	... −5°.0
„	190°	$d = -15°.0$ ...	... −4°.0
„	185°	$d = -15°.0$ ...	... −2°.0
„	180°	$d = -15°.0$ ...	... +2°.0
„	175°	$d = -16°.0$ ...	... +8°.0

The upper extremity was near Spica in AR 203°. The zodiacal light could still be seen at 9·15 p.m. in the shape of a bow.

August the 4th at 8 p.m. The zodiacal light distinctly visible with the exception of the upper extremity. Soon after sunset the western sky became covered with streaks, all radiating from the sun's position. These were probably caused by fog, and were visible at the same place, when the zodiacal light appeared after dark.

August the 5th. The zodiacal light visible.

August the 28th. The zodiacal light visible, but the sky was too dull to admit of observation.

August the 31st. The zodiacal light very intense, but not well defined.

September the 1st at 9 p.m. The zodiacal light visible.

September the 4th at 7 p.m. The zodiacal light very intense, but the limits could not be ascertained with certainty, as the sky was not quite clear.

September the 5th. In the evening as above, and also on *September the 8th.*

September the 9th. The zodiacal light visible throughout the whole evening.

October the 4th at 8 p.m. The zodiacal light visible but not very bright.

October the 6th at 8 p.m. The zodiacal light moderately intense. Throughout the greater part of October the zodiacal light was visible in the evening and was more or less intense. The brightness of Venus interfered greatly with tracing the limits of the phenomenon: between the 2nd and 6th however some observations were made, the results of which are as follow:—

On the 3rd of October the upper extremity was near a point a few degrees towards the south of Venus.

		SOUTHERN EDGE.	NORTHERN EDGE.
AR	240°	$d = -22°$ ...	...
„	230°	$d = -23°$ ...	... −20°
„	225°	$d = -24°$ ...	... −18°
„	220°	$d = -26°$ ...	... −13°
„	215°	$d = -28°$ ...	...
„	210°	$d = -30°$ ...	...

As a rule, the northern edge of the zodiacal light was never well defined, while the southern one could always be traced with much greater certainty.

During the whole period between the last of October and the first of March, 1859, no observations have been made on the intensity and position of the zodiacal light, the circumstances being rather unfavorable.

IX.—REGISTER

93. REGISTER OF METEORS FROM THE 1st

Running Number.	Date.	Period of Observation.	Mean Time.	Estimated Azimuth.		Estimated Altitude.		In Neighbourhood of Constellation.	
				Appearance.	Disappearance.	Appearance.	Disappearance	Appearance.	Disappearance
	1858.	H. M. H. M.	H. M.	°	°	°	°		
„	March 1	9 0 to 11 0	...	...	...	...	...	...	...
„	„ 2	8 0 to 9 0	...	...	...	...	...	...	...
1	„ 5	...	3 37 a.m.	S. 22 E.	S.	35	15	...	...
2	„ 5	8 0 to 8 45	8 40 p.m.	S.	S. 10 E.	45	40	...	...
„	„ 5	10 15 to 11 0	...	...	...	...	...	...	...
3	„ 6	8 0 to 9 0	8 45 p.m.	Zenith	N.E.	...	...	...	...
„	„ 6	10 15 to 11 0	...	...	...	...	...	...	...
„	„ 7	1 0 to 1 45	...	...	...	...	...	...	...
4	„ 7	...	2 55 a.m.	S. 20 E.	S. 15 E.	25	15	...	...
5	„ 7	3 0 to 4 0	3 30 a.m.	S. 45 W.	S. 40 W.	60	56	...	...
6	„ 7	7 45 to 9 0	8 16 p.m.	S. 40 W.	S. 43 W.	40	30	Achernar	...
7	„ 7	7 45 to 9 0	8 45 p.m.	S. 80 W.	W.	12	12	...	...
8	„ 11	10 0 to 11 0	10 50 p.m.	N.	N.N.E.	25	20	...	...
9	„ 12	9 45 to 10 0	10 0 p.m.	N. 80 E.	N. 65 E.	4	2	...	...
10	„ 13	Chance	1 5 a.m.	S. 16 E.	S. 5 E.	20	5	...	...
11	„ 13	„	2 0 a.m.	E.	N. 85 E.	40	36	...	...
12	„ 13	„	3 3 a.m.	E.	N. 88 E.	45	35	...	...
13	„ 13	3 0 to 3 30	3 15 a.m.	W.	S. 80 W.	70	75	...	...
14	„ 13	3 35 to 4 0	3 53 a.m.	N. 50 E.	N. 55 E.	35	30	..	...
15	„ 13	3 35 to 4 0	3 55 a.m.	N. 20 W.	N. 10 W.	10	8	...	...
16	„ 13	Chance	8 5 p.m.	N.E.	N.	25	35	Leo	...
17	„ 13	„	11 40 p.m.	N. 80 E.	N. 72 E.	35	32	Libra	..
18	„ 14	2 25 to 2 45	2 43 a.m.	N. 40 E.	N. 35 E.	40	25	...	...
19	„ 14	9 10 to 10 40	9 20 p.m.	S. 20 E.	S.	60	60	γ Argûs in the middle of its course	
20	„ 14	9 10 to 10 40	10 20 p.m.	N. 30 W.	N. 20 W.	15	8	...	...
„	„ 15	8 0 to 8 15 9 30 to 10 0	...	...	...	...	...	...	...
21	„ 15	10 30 to 11 0	10 35 p.m.	N. 87 E.	N. 90 E.	25	12	...	...
22	„ 15	10 30 to 11 0	10 39 p.m.	S. 50 E.	S. 60 E.	60	55	...	...
23	„ 15	10 30 to 11 0	10 47 p.m.	N. 8 E.	N. 5 W.	65	65	...	...
24	„ 15	10 30 to 11 0	10 42 p.m.	S. 60 E.	S. 75 E.	50	49	...	...
25	„ 18	1 30 to 2 0	1 54 a.m.	S. 20 W.	S. 30 W.	45	36	...	...
„	„ 22	10 0 to 11 0	...	...	...	...	...	...	...
26	April 4	Chance	2 0 a.m.	N. 25 W.	S. 25 E.	Zenith		...	...
27	„ 6	„	7 5 p.m.	N. 30 W.	N. 45 W.	60	70	...	...
28	„ 10	„	3 30 a.m.	S. 70 W.	S. 75 W.	60	55	Algorab	...
29	„ 10	„	4 30 a.m.	...	...	...	...	...	...
30	„ 10	„	4 40 a.m.	S. 50 W.	S. 51 W.	12	0	...	...
„	„ 14	12 0 to 1 a.m.	...	...	...	...	...	...	...
31	„ 14	8 0 to 9 p.m.	8 15 p.m.	N. 45 W.	N. 45 W.	30	24	...	...
32	„ 14	...	9 10 p.m.	S. 15 E.	S. 10 E.	40	40	...	...
„	„ 14	11 0 to 12 0	...	...	...	...	...	...	...
„	„ 15	12 30 to 1 0	...	...	...	...	...	...	...
33	„ 15	Chance	2 5 p.m.	N. 70 E.	N. 75 E.	20	15	...	...
34	„ 17	„	12 4 p.m.	N. 65 E.	N. 50 E.	40	39	...	...
„	„ 17	10 10 to 10 50	...	...	...	...	...	...	...

OBSERVATIONS OF MR. WILLS, THREE MILES S.W. OF KOOYOORA,—Lat. 36° 40′ S. Long. 143° 35′ E.

March 26, *at* 7*h.* 32*m. p.m.*—Very bright meteor, with a train of light. The tail of light remained in the sky about fifteen seconds, and gradually faded away. White light as bright as Jupiter. Course in a line from Canopus to Spica. The commencement was about 20° above Spica, and ended two or three degrees below it. The same meteor was observed at Ballaarat, passing from Regulus towards the western horizon, and also at Dunolly, about seven deg. to the westward of Spica (not very reliable though).

March 9, 10*h.* 44*m. p.m.* (time might be erroneously noted).—A meteor of the first magnitude, with a train of light. Course *from the zenith*, passing a few minutes west of Regulus, nearly in the plane of the meridian, through an arc of 65°, in an altitude of 25°. Section 4, parish of Kingower. Lat. 36° 42′ S. Long. 143° 40′ E.—W. J. W.

March 4, 10*h.* 24*m. p.m.*—A meteor of 3rd magnitude. Course from 48 Monocer to ε Gemini, passing fifteen minutes east of Procyon. Observed at sec. 4, parish of Kingower.—W. J. W.

March 15, 7*h.* 30*m.* (at same place of observation).—A meteor of 2nd magnitude, with train of light. Course from near 95 and 96 Leonis, passing by Regulus to 14 Leonis.

OF METEORS.

MARCH, 1858, TO THE 1st MARCH, 1859.

Nucleus.		Tail.		Duration.		Remarks.
Size.	Color.	Length.	Direction.	Nucleus.	Tail.	
		° ′		S.	S.	
...	...	...	...	...	...	Full moon.
...	...	...	...	...	...	
1	Yellowish red	...	Course	...	...	Nucleus was comparable to the planet Mars, leaving a long sheet of light behind it of a yellow red.
5	White	0 30	Course	3·0	3·0	
...	...	...	...	...	...	
3	Whitish	...	Course	2·0	2·0	
...	...	...	...	...	...	
...	...	...	...	...	...	
2	White	...	...	1·5	...	Moonlight. Remarkable is the steady lustre of the stars.
5	...	...	...	1·0	...	
2	Whitish	...	Course	3·0—4·0	...	
4	Reddish	...	...	2·0	...	
4	Yellowish white	...	Course	1·0	1·0	
2	Reddish	...	Course	4·0	4·0	
3	Yellowish	...	...	2·0	...	
3	Yellowish	...	...	1·0	...	α and β Centauri, standing high above the horizon, show very different colors—α white, β blue.
3	Yellowish	...	...	2·0	...	
4	Yellowish	...	...	2·0	...	Moved slowly.
3	White	...	...	2·0	...	
3	Reddish	...	...	3·0	...	Moves slowly. Aurora Australis visible during moonlight—very beautiful.
2–3	Reddish yellow	...	...	3·0	...	Double shooting star.
3	Yellow	...	...	2·0	...	
1	Pale yellow	...	...	0·5	...	Very quick motion.
2–3	Reddish yellow	...	...	3·0	...	
2	Reddish yellow	...	...	...	...	Altogether six shooting stars were seen during the period 9h. 30m.—10h. 30m.; but most of them very small ones.
...	...	...	...	...	...	
2	Reddish	...	...	3·0	...	
2	Yellowish	...	...	2·0	...	Night thoroughly clear, and it being new moon it is quite dark.
3	Yellowish	...	...	4·0	...	
3	Yellowish	...	...	1·0	...	
3	Reddish yellow	...	...	3·0	...	
...	...	...	...	...	...	
1	Red	...	...	3·0	3·0	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
2	Reddish	The whole length of its course		2·0	2 0	
...	...	...	...	...	...	
2	Red	...	...	...	...	
2	Reddish	...	...	2·0	2·0	
...	...	...	...	...	...	Extraordinary clear night, but nothing seen.
...	...	...	...	...	...	
3	White	...	...	2·0	...	
1	Pale red	...	Course	4·0	2·0	
...	...	...	...	...	...	Attentively observed—night very favorable—but nothing seen.

March 15, 10*h.* 45*m. p.m.*—Small meteor from μ Hydræ to α^2 Cancri. This is the same meteor as No. 23 in the catalogue, and its more definite positions here were:—δ μ Hydræ = 16° 0′ S. α μ Hydræ 10h. 17m. δ α^2 Cancri = 12° 40′ N., and α, α^2 Cancri = 8h. 50m.

On the 20*th March*, 7*h.* 45*m.*, a brilliant meteor was seen at Heathcote; it was of the first magnitude, and moved perpendicularly towards the horizon in S.E.

April 12 (observed by Mr. W. J. W., at St. Arnaud).—Observed a meteor of third magnitude passing from α Trianguli Australis nearly across the South pole, and ending about two degrees above the larger Magellan cloud, and saw four other small ones within the same half hour—one pursuing the same course as the above, two at right angles, and the other at 45° nearly. Lat. 36° 37′ 56″ S.; Long. 143° 26′ E.

April 13 (at same place, and same observer).—A bright meteor of first magnitude, visible four seconds through an arc of 20° to 25°. It commenced at a point between Achernar and the small Magellan cloud, curved slightly towards the West, and became extinct between δ and γ Phœnicis.

On the 26*th March*, 9*h.* 3*m.*, a beautiful meteor fell at Heathcote.

REGISTER OF METEORS—*continued.*

Running Number.	Date.	Period of Observation.	Mean Time.	Estimated Azimuth.		Estimated Altitude.		In the Neighbourhood of Constellation.	
				Appearance.	Disappearance.	Appearance.	Disappearance	Appearance.	Disappearance
	1858.	H. M. H. M.	H. M.	°	°	°	°		
34	April 17	11 15 to 11 30	...	...	...	...	...	...	...
35	„ 18	7 0 to 8 0	7 5 p.m.	N. 3 E.	N.	24	10	...	...
36	„ 19	7 0 to 8 0	8 10 p.m.	N. 3 E.	N. 18 E.	25	14	...	...
37	„ 19	8 0 to 9 0	8 30 p.m.	S.	...	...	...	...	...
38	„ 19	...	...	...	...	...	...	...	...
39 & 40	„ 19	...	...	...	...	...	...	...	...
41	„ 19	12 17 to 12 45	12 20 a.m.	N.	N. 5 E.	35	25	...	...
42	„ 19	12 17 to 12 45	12 24 a.m.	S. 48 W.	S. 42 W.	50	40	Milky Way	
43	„ 19	Chance	1 22 a.m.	S. 45 W.	S. 60 W.	35	30	Milky Way	
44	„ 19	„	12 57 a.m.	S. 30 W.	S. 27 W.	60	50	...	...
45	„ 20	4 0 to 5 0	4 15 a.m.	...	...	...	...	Capricorn	...
46 & 47	„ 20	4 0 to 5 0	...	...	...	...	...	...	...
48	„ 20	11 30 to 12 30	12 27 a.m.	S. 80 W.	N. 75 W.	45	38	...	...
49	„ 22	Chance.	3 4 a.m.	S. 40 W.	S. 50 W.	20	17	...	...
50	„ 24	11 15 to 11 55	11 43 p.m.	S. 45 E.	S. 35 E.	40	14	...	...
51 & 52	„ 24	12 0 to 4 0	...	...	...	...	...	Sagittarius	...
53	„ 25	6 0 to 6 45	6 43 p.m.	S. 45 W.	S 50 W.	6	4	...	...
53	„ 25	8 0 to 9 0	...	...	...	...	...	...	...
54	May 2	Chance	6 45 p.m.	S. 10 E.	S. 40 E.	35	15	Centaurus	...
55	„ 2	„	10 55 p.m.	S. 80 W.	S. 78 W.	25	15	...	...
55	„ 4	8 0 to 9 0	...	...	...	...	...	...	...
55	„ 5	6 0 to 7 0	...	...	...	...	...	...	...
56	„ 5	7 10 to 8 0	7 25 p.m.	S. 5 E.	S. 5 W.	10	6	Pavo	...
57	„ 8	8 0 to 10 0	10 30 p.m.	S. 55 W.	S. 56 W.	40	30	Argo Navis	...
58	„ 8	...	...	S. 45 W.	...	65	...	...	...
59 & 60	„ 8	...	...	...	...	...	...	...	...
61	„ 8	...	11 24 p.m.	N. 75 E.	N. 40 E.	30	30	Milky Way	Scorpio
62–64	„ 9	1 0 to 2 0	...	...	...	...	...	...	...
65	„ 9	1 0 to 2 0	1 34 a.m.	N. 4 E.	N. 4 W.	20	15	...	...
66	„ 9	1 0 to 2 0	1 34 a.m.	S. 50 W.	...	50	...	...	...
67	„ 9	Chance	2 45 a.m.	W.	N. 70 W.	25	15	...	Algorab
68	„ 9	„	320 to 3 40 a.m.	S. 85 W.	N. 85 W.	65	50	Mars	
69	„ 10	6 0 to 7 0	6 45 p.m.	S. 20 E.	S. 25 E.	65	15	Through	Centaurus
70	„ 10	Chance	7 11 p.m.	N. 65 E.	N. 35 E.	20	17	...	Arcturus
71	„ 10	6 0 to 7 0	7 5 p.m.	...	...	...	...	Saturn	...
72	„ 10	Chance	7 45 p.m.	S. 5 W.	S. 15 W.	15	12	Through the small cloud	
73	„ 10	10 0 to 11 0	10 30 p.m.	W.	N. 85 W.	50	40	...	...
74	„ 10	11 0	11 0 p.m.	S.	S.	45	35	...	...
„	„ 11	12 0 to 1 0	...	...	...	...	...	...	...
75	„ 11	Chance	2 56 a.m.	S. 40 E.	N. 40 W.	85	75	...	...
76	„ 11	„	2 58 a.m.	S. 45 E.	S. 60 E.	60	65	...	...
77	„ 11	3 0 to 3 30	3 5 a.m.	N. 60 E.	N. 75 E.	60	55	...	...
78	„ 14	11 0 to 12 0	11 30 p.m.	...	...	...	...	In Corvus	
79	„ 14	11 0 to 12 0	11 35 p.m.	W. by N.	...	Near Horizon.	...	...	...
80	„ 15	12 0 to 1 0	12 40 a.m.	N. 80 E.	E.	70	75	...	...
„	„ 15	1 0 to 2 0	...	...	...	...	...	...	...
81	„ 15	7 30 to 8 0	7 43 p.m.	N. 40 W.	N. 40 W.	7	3	Twins	
82	„ 17	Chance	2 10 a.m.	N. 85 W.	N. 85 W.	35	20	...	...
83	„ 17	„	9 10 p.m.	N. 10 W.	N. 15 W.	75	75	West of Corvus	
84	„ 17	9 10 to 9 25	9 15 p.m.	N. 20 W.	N. 21 W.	70	67	West of Corvus	
85	„ 17	9 10 to 9 25	9 14 p.m.	N. 50 E.	...	30	...	...	...
86–91	„ 18	12 0 to 5 0	...	...	...	...	...	...	...
92	„ 17	Chance	11 53 p.m.	S. 90 W.	S. 80 W.	75	50	...	...
93	„ 22	„	4 3 a.m.	W.	...	...	...	...	...
94	„ 22	„	4 30 a.m.	S.E	...	...	...	...	...
95	„ 25	3 15 to 4 45	4 42 a.m.	S. 45 E.	S. 45 E.	20	10	...	...

May 2, 7*h.* 20*m. p.m.*, at St. Arnaud, Mr. W. J. W. observed a meteor of second magnitude, whose course was in a line from α Trianguli Australis to Antraes—length of arc, 20°, nearest the latter star.

April 20, 9*h.* 30*m. p.m.*, at Camperdown, a bright meteor moving downwards in S.E.

REGISTER OF METEORS—*continued.*

Nucleus.		Tail.		Duration.		Remarks.
Size.	Color.	Length.	Direction.	Nucleus.	Tail.	
				s.	s.	
...	...	...	...	...	...	Attentively observed—night very favorable—but nothing seen.
...	...	...	...	...	...	
1	Intense red	...	...	4·0	...	
...	...	...	...	...	...	
...	...	...	...	...	...	A small one seen in the head of the Southern Serpent.
...	...	...	...	...	...	Two more seen, but very small ones.
4	Yellow	...	...	0·2	...	
3	Yellowish	...	...	0·5	...	
2	Yellow	...	...	1·0	...	
5	Whitish	...	...	1·0	...	
...	...	...	...	...	...	Small, moving from N. to S.
...	...	...	...	...	...	Two small ones seen.
1	Reddish	30′	Course	3·0	4·0	Several small ones seen besides.
1	White	...	...	1·5	...	
like Jupiter	White	...	...	3·0	...	Large. When near extinction a tail of very inconsiderable length formed itself, and immediately after, the nucleus burst and parted in two large and a great many small fragments.
...	...	...	...	...	...	Only two small ones seen following rapidly on each other. Two observers saw no more, although it was dark after the setting of the moon.
3	Reddish	...	...	3·0	...	
...	...	...	...	...	...	Moonlight and nothing seen.
1	Red	3°—4°	Course	5·0	5·0	
size of Jupiter	White	...	...	2·0	...	Seen through a thin cloud or veil.
...	...	...	...	...	...	None seen, although sky perfectly clear and no moonlight.
...	...	...	...	...	...	Thin veil covers the sky.
5	...	...	...	...	...	
1	...	...	...	2·0	...	
...	...	...	...	...	...	
...	...	...	...	...	...	Two small ones seen, but not registered.
3	Reddish yellow	5°	Course	2·0	0·5	
...	...	...	...	...	...	Three small ones seen, not specified.
3	...	...	Course	2·0	2·0	
...	...	...	...	...	...	
1	Bluish white	...	...	1·0	...	Very bright and extraordinarily quick motion.
1	White	...	...	1·5	...	
Jupiter	all colours of the prism.	...	...	7·0	...	Moves very slowly and continued to increase in size.
2	Yellow	15°	Course	2·0	1·0	
2 Venus	Reddish	...	...	...	...	A bright meteor issuing apparently from Saturn, course but slightly inclined towards the horizon, and moving towards the west (W. ← Saturn. → E.)
3	White	...	...	2·0	...	Motion pretty quick.
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	Several small ones of weak light and short duration, mostly in zenith.
1	Reddish yellow	...	...	3·0	...	Quick motion.
3	Pale yellow	...	...	2·0	...	
2	Pale yellow	...	...	2·0	...	
2	...	...	...	...	...	
...	...	...	...	...	...	
2	Pale yellow	...	...	1·0	...	
...	...	...	...	...	...	
1	Red	...	...	3·0	...	Very slowly, and vertical.
2	White	...	...	1·0	...	
3	White	...	...	1·0	...	Beautiful clear night.
3	...	...	...	2·0	...	
3	...	...	...	1·0	...	
...	...	...	...	...	...	Six small ones counted, at 1h. 0m., 3h. 0m., and 4h. 30m., four in west and two in north.
2	White	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
3	Blue	...	...	1·0	...	

April 20, 9*h.* 45*m. p.m.*, at Camperdown. a bright meteor.

May 14, 9*h.* 30*m. p.m.*, a large meteor was seen at Heathcote.

REGISTER OF METEORS—*continued.*

Running Number.	Date.	Period of Observation.	Mean Time.	Estimated Azimuth.		Estimated Altitude.		In Neighbourhood of Constellation.	
				Appearance.	Disappearance.	Appearance.	Disappearance	Appearance.	Disappearance
	1858.	H. M. H. M.	H. M.	°	°	°	°		
96	June 4	Chance	8 30 p.m.	W.	...	...	...	...	...
97	„ 4	„	9 45 p.m.	W.	...	...	...	...	...
98	„ 4	„	11 20 p.m.	S.E.	...	...	...	...	...
99	„ 4	„	11 14 p.m.	N.	...	...	...	...	...
100	„ 4	„	6 55 p.m.	N. 30 W.	N. 30 W.	28	8	Leo	...
101	„ 6	„	12 57 a.m.	N. 75 E.	N. 77 E.	35	25	...	...
102	„ 6	„	2 6 a.m.	S. 5 E.	S. 7 E.	28	15	...	...
103	„ 9	8 15 to 8 30	8 30 p.m.	N. 35 W.	S. 38 W.	28	10	Leo	...
104	„ 10	Chance	1 5 a.m.	...	...	...	...	...	...
105-7	„ 15	„	12 0 mid.	...	...	...	...	...	...
108	„ 17	5 0 to 5 30	5 20 a.m.	N.	N. 5 E.	65	65	...	...
109	„ 17	5 0 to 5 30	5 25 a.m.	N. 53 E.	N. 51 E.	12	10	Ram	
110	„ 16	Chance	10 40 p.m.	S. 3 W.	S. 5 W.	45	30	...	...
111	„ 18	„	1 18 a.m.	S. 7 E.	S. 5 E.	35	30	Over the larger cloud	
112	„ 22	„	2 19 a.m.	N. 80 E.	N. 65 E.	50	50	...	...
113	„ 22	„	3 59 a.m.	N. 10 E.	N. 70 E.	45	35	...	...
114	„ 23	„	9 11 p.m.	S. 50 W.	S. 45 W.	30	25	...	...
„	„ 24	12 0 to 1 0	...	...	...	...	...	...	...
115	„ 27	Chance	11 3 p.m.	E.	S. 85 E.	65	60	Moon	...
„	„ 28	12 0 to 1 30	...	...	...	...	...	...	...
116	„ 30	8 0 to 8 30	8 10 p.m.	W.	...	...	...	...	...
117	July 6	12 0 to 1 0	12 40 a.m.	S. 30 E.	S. 36 E.	60	50	...	...
118	„ 6	12 0 to 1 0	12 55 a.m.	W.	W. 10 N.	75	70	...	...
119	„ 6	Chance	3 0 a.m.	N. 45 E.	N. 60 E.	40	38	...	...
120	„ 6	3 0 to 4 0	3 35 a.m.	N. 30 E.	N. 35 E.	80	65	...	...
121	„ 7	Chance	7 35 p.m.	S. 45 W.	S.	20	40	...	...
122	„ 8	„	7 32 p.m.	W.	W.	65	22	...	...
„	„ 8	9 0 to 10 0	...	...	...	...	...	...	...
123	„ 11	Chance	1 58 a.m.	S. 6 W.	S. 2 W.	12	3	Between the two stars ϑ and η, Argûs the middle of its course	
124	„ 11	2 25 to 2 30	2 30 a.m.	...	...	...	...	298 & δ Hydrus	
125	„ 11	2 45 to 2 55	2 53 a.m.	...	...	...	...	α & η Reticuli Rhomb.	
126	„ 13	Chance	2 15 a.m.	N. 76 E.	N. 80 E.	45	43	Passing between η & θ Ceti	
127	„ 13	„	6 25 p.m.	S.	...	...	...	...	...
128	„ 14	10 15 to 10 50	10 30 p.m.	...	...	...	...	Through the middle of γ Scorpionis	
129	„ 14	10 15 to 10 50	10 44 p.m.	S. 75 W.	S. 60 W.	40	35	In the neighbourhood of ϑ Centauri, the middle of its course	
130	„ 14	11 10 to 11 20	11 18 p.m.	S. 80 E.	S. 80 E.	25	18	...	...
131-2	„ 15	7 0 to 12 0	...	...	...	...	...	...	...
133-5	„ 17	12 0 to 1 0	...	...	...	...	...	...	...
„	„ 17	2 0 to 2 30	...	...	...	...	...	...	...
136	„ 17	Chance	3 5 a.m.	N. 45 W.	N. 40 W.	60	54	...	...
„	„ 18	10 30 to 11 15	...	...	...	...	...	...	...
137	„ 19	...	2 50 a.m.	S. 45 W.	...	...	...	...	...
138	„ 19	...	3 50 a.m.	S.	...	...	...	...	...
139	„ 22	4 0 to 5 0	4 38 a.m.	N. 50 E.	N. 49 E.	28	20	...	Aldebaran
140	„ 22	Chance	5 8 a.m.	Zenith 10 S.	...	...	...	...	...
141	„ 25	11 30 to 12 20	12 30 a.m.	N. 20 E.	N. 20 E.	40	35	...	...
142	August 2	Chance	8 14 p.m.	N. 56 E.	N. 70 E.	30	20	α Aquilae	...
143	„ 3	6 30 to 7 0	6 35 p.m.	N. 30 W.	N. 35 W.	25	20	near Arcturus	...
144	„ 3	6 30 to 7 0	7 0 p.m.	N 25 W.	N. 30 W.	25	20	near Arcturus	...
„	„ 3	8 0 to 8 30 p.m.	...	...	...	...	...	...	...

Note.—No. 122.—A magnificent meteor. Although the size is given above as that of Mars it was considerably larger. At its appearance it was small, but increased as it approached the horizon, and was enveloped in a bright green lustre, at a height of 35°. It moved rather slowly, almost through the prime vertical. It was even observable when it moved behind the clouds. It disappeared without audible noise or sound. This meteor was also seen at Geelong, where the blaze of its light appeared fully equal to that of a full moon on the clearest night. It gave for about three-quarters of a minute (?) a most magnificent illumination to the sky, and lasted altogether about a minute and a half (?). Its body appeared when first seen with a sort of halo of light around it. Its brilliancy gradually decreased, and was soon extinguished. Its direction appeared to be from a point near the zenith towards the western horizon, and just before it was lost sight of it seemed to break in two

REGISTER OF METEORS—*continued.*

Nucleus.		Tail.		Duration.		Remarks.
Size.	Color.	Length.	Direction.	Nucleus.	Tail.	
				s.	s.	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
3	Yellowish	...	...	2·0	...	
2	White	...	...	1·0	...	
1	White	...	...	1·0	...	
2	Reddish	...	...	2·0	...	
...	...	...	...	...	...	Direction towards west.
...	...	...	...	...	...	Three different small ones observed, but not registered.
2	...	...	...	1·0	...	Of very great celerity.
2	...	...	...	...	...	Exactly in the brightest part of the zodiac.
4	...	...	...	2·0	...	
2	White	...	...	0·5	...	
1	Reddish	...	...	2·0	...	Course curved.
3	White	...	...	0·25	...	Very rapid.
2	White	...	...	1·0	...	
...	...	...	...	...	...	
1	White	...	...	2·0	...	Although so near the moon it shone very brightly.
...	...	...	...	...	...	
3	White	...	...	...	...	
2	Reddish	...	Course	2·0	2·0	
2	Reddish	...	Course	2·0	2·0	
2	Yellowish white	...	Course	2·0	2·0	
2	Yellowish white	...	...	2·0	2·0	Besides these, several small ones of weak light and short duration observed.
Mars	Red	...	Course	3·0	3·0	
Mars	...	30°	...	4·0	4·0	
...	...	...	...	...	...	
1	White	...	...	2·0	...	
3	...	...	...	1·0	...	Course horizontal with very great velocity.
3–4	...	...	...	1·0	...	Course horizontal.
3–4	...	...	...	1·0	...	
...	...	...	...	...	...	
4	...	...	S.W.	0·5	...	
4	White	...	...	1·5	...	
3	White	...	...	1·0	...	
...	...	...	...	...	...	Only two seen.
...	...	...	...	...	...	Three small ones seen.
...	...	...	...	...	...	
3	White	...	...	1·0	...	
...	...					
...	...					
...	...					
3	Yellow	...	...	0·5	...	
2	White	...	...	0·5	...	
...	Red	...	...	...	...	
...	Light blue	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	...	...	

pieces. This meteor was also observed by Mr. Ludwig Becker while going down Collins-street, and who describes it as follows:—"It appeared in due W., nearly at the altitude of the Southern Cross, and about two breadths of the Milky Way distant from it to the north. Its color was bluish white. It fell nearly vertical, a little inclined to the south,—duration more than three seconds—disappeared behind a bank of clouds about 30° above the horizon. It left behind but a few rapidly disappearing sparks of a whitish color. Objects in the street showed well defined shadows." It was also seen at Sandhurst towards south, in an altitude of 15°, when it appeared to be of a construction resembling a double star.

REGISTER OF METEORS—*continued.*

Running Number.	Date.	Period of Observation.	Mean Time.	Estimated Azimuth.		Estimated Altitude.		In the Neighbourhood of Constellation.	
				Appearance.	Disappearance.	Appearance.	Disappearance	Appearance.	Disappearance
	1858.	H. M. H. M.	H. M.	°	°	°	°		
144	August 3	9 0 to 9 30	...	...	...	...	...	...	...
„	„ 3	6 15 to 7 0	...	...	...	...	...	...	...
145	„ 4	7 20 to 8 0	7 50 p.m.	...	...	in equal altitude to α Aquilæ.		Near α Aquilæ	...
146	„ 5	5 30 to 6 30	6 25 a.m.	N. 30 W.	N. 5 W.	28	12	Near Arcturus	...
147	„ 5	5 30 to 6 30	6 35 a.m.	N. 60 W.	N. 30 W.	40	32	Between Bootes and Virgo	...
148	„ 6	12 30 to 12 50	12 36 a.m.	...	...	...	...	Shield of Sobieski	...
149	„ 6	12 30 to 12 50	12 40 a.m.	...	...	...	...	Scorpion	...
150	„ 6	12 30 to 12 50	12 50 a.m.	...	...	...	...	...	...
151	„ 6	Chance	2 15 a.m.	...	...	Aquila	...	...	...
152	„ 6	3 5 to 3 15	3 12 a.m.	S. 40 E.	S. 45 E.	15	10	...	...
153	„ 6	Chance	5 4 a.m.	S. 40 E.	S. 50 E.	45	35	...	...
„	„ 6	6 15 to 6 30	...	...	...	...	...	...	...
154	„ 5	8 0 to 8 45	8 38 p.m.	...	...	...	...	...	...
155	„ 5	9 0 to 10 0	9 4 p.m.	...	...	...	...	...	...
156	„ 5	9 0 to 10 0	9 55 p.m.	...	...	...	...	...	...
157	„ 5	9 0 to 10 0	9 58 p.m.	...	...	...	...	...	...
158	„ 5	10 0 to 10 45	10 45 p.m.	...	...	...	...	...	...
159	„ 5	11 0 to 11 30	11 30 p.m.	...	...	...	...	...	...
„	„ 7	12 35 to 12 54	...	...	...	...	...	...	...
160	„ 7	5 25 to 5 45	5 27 a.m.	N. 10 W.	N. 13 W.	30	25	...	...
161	„ 7	Chance	6 13 a.m.	N. 21 W.	S. 12 W.	32	15	...	...
„	„ 9	12 0 to 1 0	...	...	...	...	...	...	...
162	„ 21	10 0 to 11 0	10 48 p.m.	N.	N. 5 W.	30	25	...	...
163	„ 21	10 0 to 11 0	10 50 p.m.	N. 15 W.	N. 25 W.	35	25	...	...
164	„ 23	1 25 to 1 51	1 51 a.m.	S.	S. 5 E.	23	12	...	...
165	„ 24	Chance	7 55 p.m.	N. 80 W.	N. 81 W.	25	12	...	...
166	„ 24	Chance	...	...	...	...	...	...	...
167	„ 24	Chance	1 25 a.m.	N. 15 E.	N. 20 E.	30	20	...	...
168	„ 24	9 p.m. to 1 a.m.	9 48–53 p.m.	S. 15 E.	S. 15 E.	80	10	Easterly of Canopus	
169	„ 28	Chance	7 30 p.m.	...	...	...	...	Vega	...
170	Septr. 1	Chance	9 49 p.m.	S. 60 E.	S. 55 E.	24	18	...	...
171	„ 1	10 0 to 11 0	10 25 p.m.	...	...	...	...	...	...
172	„ 1	6 30 to 7 50	6 57 p.m.	N. moving towards W.		...	...	...	...
173	„ 1	6 30 to 7 50	7 7 p.m.	N.N.W.	...	...	...	...	...
„	„ 1	...	...	...	...	...	...	...	...
174	„ 1	Chance	6 55 p.m.	...	...	...	...	To the right of Southern Cross	
175	„ 2	Chance	12 55 a.m.	S. 20 W.	S. 35 W.	25	25	...	...
176	„ 4	9 0 to 9 30	9 25 p.m.	W.	S. 70 W.	25	22	...	...
177	„ 20	Chance	10 10 p.m.	S. 20 E.	S. 15 E.	15	12	Argo	...
178	„ 30	Chance	11 56 p.m.	S. 10 E.	S. 9 E.	20	18	...	...
179	„ 30	Chance	11 58 p.m.	N. 4 E.	N. 4 E.	60	5	...	...
180	October 1	Chance	10 18 p.m.	S. 36 W.	S. 36 W.	50	40	...	...
181	„ 1	Chance	10 19 p.m.	S. 30 W.	S. 30 W.	40	35	...	...
182	„ 2	7 0 to 8 0	7 28 p.m.	W. 5 N.	W. 5 N.	Height of Antares		Middle of its course, near Antares	
183	„ 2	7 0 to 8 0	7 41 p.m.	N. 48 W.	N. 58 W.	30	20	...	...
184	„ 2	9 0 to 10 0	9 7 p.m.	...	...	...	...	...	...
185	„ 2	9 0 to 10 0	9 37 p.m.	...	...	...	...	Cross	...
186	„ 2	9 0 to 10 0	9 57 p.m.	S. 80 E.	S. 65 E.	...	...	Cetus	...
187	„ 3	7 0 to 8 0	7 35 p.m.	...	...	...	...	Antares	...
188	„ 3	9 30 to 11 0	11 5 p.m.	...	...	...	...	Aquila	...

No. 168.—Description of this Meteor, as given by the *Argus*:—A brilliant Meteor fell in the southern part of the heavens, about a quarter to ten o'clock. Just before the moment of its extinction it expanded into a broad blue flame, discharging several spheres of fire, intensely yellow in color, and disseminating a transitory flash of light, in comparison with which the lustre of the full moon appeared dim.

REGISTER OF METEORS—*continued.*

Nucleus.		Tail.		Duration.		Remarks.
Size.	Colour.	Length.	Direction.	Nucleus.	Tail.	
...	...	...	...	...	...	
...	...	...	...	...	...	
4	...	...	...	...	...	Two hours' observation, none seen.
...	White	...	...	3·0	...	
...	...	...	...	2·0	...	
5	...	...	...	1·0	...	The course inclined towards south.
5	...	...	...	1·0	...	Do., do.
2	...	...	...	1·0	...	Course, vertical, inclined towards south; β and δ Scorpionis in the middle of its course.
1	...	...	...	1·0	...	
2	White	...	...	1·0	...	
4	...	...	...	1·0	...	
...	...	...	...	...	...	
4	...	...	...	...	...	Towards south on the westerly sky.
4	...	...	...	...	...	Proceeded from Milky Way towards N.
1	...	...	...	...	...	Both in the same part of the heavens, vertical downwards towards S. to 10—12°
1	...	...	...	...	...	
...	...	...	...	...	...	On the northern horizon, direction towards N.
...	...	...	...	...	...	On the westerly sky, direction towards N.
...	...	...	...	...	...	
2	White	...	...	0·5	...	
Jupiter	Orange purple and violet in the tail.	45°	Course	5·0	6·0	No. 161. At the time that this meteor was exactly westerly to the observer its zenith distance was about 20°—24°. It was extinct after 5 seconds and only the tail was visible, distinctly pale green. The azimuth given refers to the disappearance of the tail, the nucleus disappeared about 10° higher. It was already so bright morning that Jupiter appeared but feebly. Appearance of this meteor, sudden; its motion very regular. It was calm, but no sound was audible or anything remarkable observed.
...	...	...	...	...	...	
3—4	...	...	...	0·5	...	
1—2	...	...	...	1·0	...	
1	White	...	...	0·5	...	
1	White	...	...	2·0	...	Somewhat more southerly and nearer the horizon than Venus.
...	...	...	...	...	...	Another was seen, but not registered as to time and position.
1	Red	...	Course	3·0	3·0	
1	...	...	...	3·0	3·0	Very bright and large: a most splendid meteor, without any sound, and with splendid clear light.
...	Red	...	...	...	...	Several degrees from Vega, in equal altitude. (L.B.)
1	Red	...	...	2·0	...	Remarkably slow motion. Its course although very short was strongly curved.
...	...	...	...	...	...	Course from E. to W., short, touching the southern edge of the smaller cloud.
small	...	...	...	...	...	
...	...	...	...	...	...	Moving towards W.
...	...	...	...	...	...	Several small ones seen without taking down the observation.
3	Grey	...	...	2·0	...	Left a grey streak behind visible for a second. (L.B., observer.) Very slow motion.
2	White	...	...	3·0	...	Very slow motion.
2	White	...	...	4·0	...	
2	...	...	...	2·0	...	
2	White	...	...	0·5	...	
1	White	...	...	3·0	...	
...	Red	...	...	...	...	Both these moved slowly, with reddish light.
...	Red	...	...	...	...	
3	White	...	Course	2·0	...	Course, 12 degrees.
2	White	...	...	2·0	...	
...	...	...	...	2·0	...	Appeared near Mars, and disappeared near ξ Ophiuchi.
...	...	...	...	...	...	Moved nearly horizontally from East to West.
...	...	...	...	...	...	
4	...	...	...	1·0	...	A few minutes to the North of Antares.
4	...	...	...	1·0	...	Course of one degree at most.

REGISTER OF METEORS—*continued.*

Running Number.	Date.	Period of Observation.	Mean Time.	Estimated Azimuth.		Estimated Altitude.		In the Neighbourhood of Constellation.	
				Appearance.	Disappearance.	Appearance.	Disappearance	Appearance.	Disappearance
	1858.	H. M. H. M.	H. M. S.	°	°	°	°		
189	October 5	Chance	8 31 p.m.	...	...	...	...	One degree below Mars	Near Altair
190	„ 5	Chance	10 45 p.m.	...	...	...	...	To the W. of S. pole	...
191	„ 12	2 30 to 3 0	2 30 a.m.	S. 30 W.	S. 10 W.	50	40	...	...
192	„ 12	2 30 to 3 0	2 54 a.m.	W.	E.	Zenith		...	...
193	„ 12	2 30 to 3 0	3 0 a.m.	N. 20 E.	N. 25 E.	45	30	...	...
194	„ 31	7 15 to 7 50	7 46 p.m.	W.	W.	35	18	...	...
195	Decr. 4	Chance	11 50 p.m.	E.	N. 55 E.	35	12	...	...
196	„ 4	Chance	11 58 p.m.	N. 75 E.	N. 60 E.	60	45	...	...
197	„ 5	Chance	12 2 a.m.	S. 10 E.	S. 5 W.	40	30	...	...
198	„ 5	Chance	12 26 a.m.	S. 85 E.	N. 85 E.	30	20	...	...
199	„ 13	Chance	8 59 p.m.	S. 82 E.	N. 75 E.	25	20	...	...
200	„ 13	9 0 to 10 0	9 5 p.m.	...	...	...	...	Achernar, in the middle of its course	
201	„ 13	9 0 to 10 0	8 55 p.m.	S. 35 W.	S. 45 W.	28	20	...	...
202	„ 13	9 30 to 9 55	9 54 p.m.	Towards N.W.		...	...	In the Hare	
203	„ 14	Chance	7 49 p.m.	S. 10 E.	S. 10 E.	About 55	About 20	...	...
„	„ 14	Chance	7 50 p.m.	S. 30 E.	S. 30 E.	40	20	...	...
204	„ 15	1 0 to 1 55	1 50 a.m.	N. 70 E.	N. 66 E.	30	25	...	...
205	„ 23	8 0 to 9 0	8 15 p.m.	N. 20 E.	N. 25 E.	8	0	Auriga	...
206	„ 23	Chance	9 34 p.m.	S. 75 E.	N. 70 E.	14	12	Alphard in the middle of its course	
207	„ 23	8 15 to 8 50	8 43 p.m.	N. 25 E.	N. 3 E.	30	30	Pleiades	
208	„ 28	8 0 to 11 0	9 44 p.m.	...	...	...	...	...	...
209	„ 28	8 0 to 11 0	9 54 p.m.	...	...	...	...	Head of Hydra	
210	„ 28	8 0 to 11 0	10 41 p.m.	...	...	...	...	...	...
211	„ 28	8 0 to 11 0	11 15 p.m.	S. 10 W.	S. 15 W.	15	12	...	...
212	„ 29	10 0 to 11 0	10 20 p.m.	S. 45 E.	S. 40 E.	35	30	...	...
213	„ 29	10 0 to 11 0	10 21 p.m.	S. 20 W.	S. 25 W.	40	38	...	...
	1859.								
214	Jan. 14	Chance	11 0 p.m.	...	...	...	...	...	...
215	„ 14	Chance	11 29 p.m.	...	...	...	...	...	...
216	„ 14	Chance	11 29·5 p.m.	...	...	...	...	...	...
217	„ 14	1 15 to 2 0	2 0 a.m.	E.	N. 70 E.	30	18	Spica	
218	„ 14	3 15 to 3 55	3 20 a.m.	S. 80 W.	S. 70 W.	25	5	Near α and β Leonis	
„	„ 21	9 15 to 9 45							
„	„ 21	9 45 to 10 0	...	...	...	...	...	...	...
„	„ 21	10 15 to 10 35							
219	„ 25	Chance	9 46 p.m.	N. 5 W.	N.	50	45	ϵ Orionis	α Orionis
220	„ 25	Chance	11 32 p.m.	S. 75 W.	S. 75 W.	25	...	...	...
221	„ 27	Chance	11 44 p.m.	S. 80 E.	E.	25	18	...	...
222	„ 27	Chance	11 47 p.m.	S. 8 E.	E.	30	15	...	...
223	„ 28	12 30 to 12 50	12 44 a.m.	N. 75 W.	N. 73 W.	25	17	Orion	Orion
224	„ 28	Chance	12 0 a.m.	S. 45 E.	S. 20 E.	40	25	...	...
225	„ 28	Chance	1 8 a.m.	N. 70 W.	N. 60 W.	35	25	Orion	Orion
226	„ 28	1 30 to 2 0	1 43 a.m.	S. 37 E.	S. 40 E.	18	14	...	...
229	„ 28	3 15 to 3 55	3 27 a.m.	S 80 E.	S. 70 E.	30	20	...	Above Venus
230	„ 28	3 15 to 3 55	3 53 a.m.	S. 75 W.	S. 75 W.	25	20	...	...
231	„ 31	2 15 to 2 50	2 35 a.m.	N. 40 W.	N. 40 W.	35	25	δ Cancri	...

October 31. 6*h.* 45*m. p.m.*, at Ballaarat.—A fine meteor observed by Mr. W. W. Wills half way between the comet and Venus, passing westward in a line parallel with the comet and Antares, and ending opposite the latter star. (Position of comet, 17h. 55m. R.A., 40° 1′ S. declination.) It left a streak of light behind it like a sky-rocket.

November 11, *between* 12*h. and* 1*h. a.m.*—Five meteors in the neighbourhood of the Southern Cross were observed by Mr. Ludwig Becker—three very small and of short courses, and two of longer duration and more brilliant nucleus.

REGISTER OF METEORS—*continued.*

Nucleus.		Tail.		Duration.		Remarks.
Size.	Color.	Length.	Direction.	Nucleus.	Tail.	
		°		S.	S.	
...	...	...	...	3·0	...	Moved slowly through the Constellation of Aquila.
...	...	...	...	...	...	Fell nearly vertically, a little inclined towards W.; commenced small, but ended the size of a star of first magnitude.—(Observation of Mr. L. B.)
2	Whitish	...	...	2·0		
3	White	...	...	1·0	...	Very quick motion.
2	White	...	...	2·0	...	
1	White	...	...	3·0	...	Very slow and uncertain motion.
Jupiter	Pale yellow	0·5	Course	4 0	...	
1	Reddish yellow	...	...	2·0	...	
1	...	...	...	2·25	...	Remarkably quick motion.
1	...	...	...	1·0	...	
1	Reddish	...	...	3·0	...	Small at the beginning, and increasing.
2	Whitish	...	..	...	...	From zenith to Achernar.
1	White	...	...	1·0	...	Brightest when disappearing.
6	...	...	...	0·25	...	
Larger than Venus	Whitish green	...	...	1·5	...	It was lost sight of behind some buildings, and seemed to leave sparks behind it.—(Observed by Mr. Ludwig Becker.)
...	White	...	...	3·0	...	Same meteor observed at the Observatory.
5	...	...	...	0·5	...	
2	...	...	...	1·0	...	
2	Reddish	1·0	Course	4·0	...	When this meteor passed close to Alphard it appeared exactly like a comet, and even the tail assumed near the nucleus the cometary shape. It moved remarkably slow, and continued its course after the tail had disappeared. It passed Alphard in the first half of its course so near that the distance could hardly have been a few minutes.
2	Yellowish white	2·0	Course	1·5	...	
3	...	...	...	1·0	...	To the South of the Nebula Minor.
4	...	...	...	0·5	...	
4	...	...	...	0·5	...	Asell. Aust. Asell. Borea.
3	...	...	...	1·0	...	
3	White	...	...	2·0	...	
3	White	...	...	1·0	...	
...	Red	...	...	2·0	...	Appeared a few degrees South, and in equal height with constellation Cancer, and disappeared two degrees below this. Light was variable; it flashed up brightly several times, and disappeared again. Color, decidedly red; duration, 2 sec.
...	...	...	...	...	...	In horizontal direction, with extraordinary rapidity moved from E. to W.
2	...	...	...	...	...	Through Orion, and also with great rapidity. No tail.
4	Yellow	...	...	0·1	...	
2	Yellow	...	...	0·5	...	
...	...	...	...	...	...	No meteors seen, although the night was clear, and in the commencement the moon did not shine.
4	...	...	...	0·1	...	
Brighter than Jupiter	White	...	...	0·2	...	Disappeared behind a black cloud.
3	White	...	...	0·5	...	Motion very rapid.
2	Bluish white	...	...	1·0	...	Motion very rapid.
3	...	...	...	0·5	...	Motion very rapid.
1	Reddish yellow	...	...	2·0	...	Motion very rapid.
3	...	...	...	0·5	...	Motion very rapid.
3	...	...	...	0·5	...	
2	Bluish white	...	...	1·0	...	
2	...	...	...	0·5	...	
4	White	...	...	0·2	...	

November 14, 7*h*. 24*m*., also seen by Mr. L. Becker.—Appeared near Nebula Major, disappeared circa 12 deg. above horizon, and fell vertical. Light equal to Venus; color, white; duration, 3 sec.; had no tail. No sound observed.

No. 203.—Whilst it was still so light, that Canopus could only just be seen, a bright meteor moved slowly in a vertical line in S.E. by S. In the commencement it was hardly larger than Canopus; but when it burst—which resulted in the falling of a great number of slowly detached sparks—it appeared to be double the size of Jupiter. The light was intense white. No sound audible.

REGISTER OF METEORS—*continued.*

Running Number.	Date.	Period of Observation.	Mean Time.	Estimated Azimuth.		Estimated Altitude.		In the Neighbourhood of Constellation.	
				Appearance.	Disappearance.	Appearance.	Disappearance	Appearance.	Disappearance
	1859.	H. M. H. M.	H. M. S.	°	°	°	°		
232	Jan. 31	2 15 to 2 50	2 43 30 a.m.	N. 5 W.	N. 5 W.	33	25	δ Leonis maj.	...
233	„ 31	2 15 to 2 50	2 44 a.m.	N. 5 W.	N. 30 W.	33	15	δ Leonis maj.	...
234	„ 31	Chance	3 12 a.m.	N. 40 W.	N. 45 W.	35	12	η Cancri	...
„	„ 31	4 15 to 4 30	...	...	...	...	...	...	...
235	„ 30	Chance	8 42 p.m.	S. 35 W.	S. 80 W.	40	20	...	...
236	„ 30	„	8 44 p.m.	S. 15 W.	S. 20 E.	45	43	Above the South Pole.	
237	„ 30	„	8 45 p.m.	S. 85 W.	S. 85 W.	35	30	...	...
238	„ 31	„	9 55 p.m.	E.	N. 80 E.	5	3	...	...
239	„ 31	10 10 to 10 40	10 30 p.m.	N. 22 W.	N. 30 W.	30	25	...	...
240	„ 31	10 10 to 10 40	10 40 p.m.	N. 20 E.	N. 15 W.	38	35	2° below Alphard	...
„	„ 31	8 0 to 9 0	...	...	...	...	...	...	...
„	„ 31	9 30 to 10 0	...	...	...	...	...	...	...
241	Feb. 1	Chance	12 18 5 a.m.	S. 10 E.	S. 7 E.	30	15	...	...
242	„ 1	1 15 to 1 55	1 24 a.m.	E.	S. 85 E.	16	10	...	...
243	„ 1	1 15 to 1 55	1 51 a.m.	S. 75 W.	S. 78 W.	27	20	...	...
244	„ 1	Chance	2 0 a.m.	N. 40 E.	N. 45 E.	24	17	...	...
„	„ 1	2 10 to 2 55	...	...	...	...	...	...	...
245	„ 1	3 15 to 3 55	3 20 a.m.	N. 55 E.	N. 40 E.	40	30	...	...
246	„ 1	3 15 to 3 55	3 23·5 a.m.	S. 70 E.	S. 55 E.	45	40	...	...
247	„ 1	3 15 to 3 55	3 35 a.m.	N. 35 E.	N. 40 E.	30	25	...	...
248	„ 1	3 15 to 3 55	3 54·5 a.m.	S. 60 E.	S. 50 E.	45	30	...	...
249	„ 1	Chance	4 4·75 a.m.	S. 12 W.	S. 12 W.	40	30	...	...
250	„ 1	„	9 7 p.m.	S. 40 E.	S. 42 E.	35	30	γ Centauri	...
„	„ 1	...	...	...	...	...	...	...	...
251	„ 2	Chance	3 46 a.m.	S. 15 E.	S. 18 E.	20	15	...	...
„	„ 2	2 0 to 3 50	...	...	...	...	...	...	...
„	„ 2	4 9 to 5 30							
252	„ 2	...	8 33 p.m.	N. 2 E.	N. 2 E.	30	20	In a line from α Orionis to β Aurigæ	
253	„ 2	...	9 0 p.m.	N. 50 E.	N. 45 E.	80	70	δ Canis majoris	Towards Procyon
254	„ 2	...	9 33 p.m.	N. 60 E.	N. 63 E.	30	25	o Leonis	α Leonis
255	„ 2	Chance	10 5 p.m.	...	...	...	...	ϕ Orionis	...
256	„ 2	10 0 to 10 40	10 28 p.m.	N. 85 E.	S. 85 E.	12	10	Below Corvus	...
257	„ 2	10 0 to 10 40	10 28·5 p.m.	N. 80 E.	S. 82 E.	14	5	Below Corvus	...
258	„ 2	...	10 57 p.m.	S. 68 E.	S. 50 E.	15	8	η Hydri	...
259	„ 2	...	11 0 p.m.	S. 45 E.	S. 45 E.	...	...	α Centauri	...
260	„ 2	...	11 5 p.m.	S. 68 E.	S. 50 E.	15	10	η Hydri	...
261	„ 2	...	11 14·5 p.m.	S. 85 E.	S. 45 E.	30	30	ε Corvi	ε Centauri
262-4	„ 3	...	...	...	...	...	...	...	...
265	„ 3	2 0 to 2 45	2 15 a.m.	N. 80 E.	E.	40	32	...	...
„	„ 3	3 0 to 3 50	...	...	...	...	...	...	...
266	„ 3	8 0 to 9 0	8 23 p.m.	...	...	...	...	δ Orionis	...
267	„ 3	...	8 31 p.m.	...	...	...	...	South of γ Hydri	...
268	„ 3	...	8 50·5 p.m.	E.	S. 80 E.	12	8	Hydra and Sextant	
269	„ 3	9 0 to 10 0	9 19 p.m.	N. 4 W.	N. 3 W.	Equal altitude with ζ Tauri		...	...
270	„ 3	9 0 to 10 0	9 20 p.m.	...	...	...	...	Between μ and γ Gemini, course towards ζ Tauri	
271	„ 3	9 0 to 10 0	9 54 p.m.	...	...	...	...	Between δ and γ Corvi	
272	„ 3	10 0 to 11 0	10 20·5 p.m.	S. 28 W.	...	15	...	α Phonicis	
„	„ 3	11 30 to 12 0	...	...	...	...	...	...	...
273	„ 4	1 0 to 2 0	1 0 a.m.	N. 70 E.	N. 65 E.	30	18	In a line from Spica to η Bootis	

REGISTER OF METEORS—*continued.*

Nucleus.		Tail.		Duration.		Remarks.
Size.	Color.	Length.	Direction.	Nucleus.	Tail.	
		°		S.	S.	
4	White	...	...	0·5	...	
2	Yellow	...	...	1·0	...	
4	White	...	...	0·2	...	
...	...	...	...	...	...	
Jupiter	Yellowish white	30	Course	4·0	3·0	The tail was of a slightly and very regularly curved appearance, and began only to show itself when the nucleus had passed a third of its course, and the tail became then by degrees brighter and brighter.
Brighter than Jupiter	...	20	Course	3·0	2·0	The tail of this meteor was similar to the last one. At its disappearance, however, the nucleus parted into two equal halves, one of which preceded the other by about one degree, and disappeared suddenly.
1	Bluish white	...	...	1·0	...	
5	...	...	...	1·0		
4	...	...	...	0·5	...	Of very short duration.
4	...	...	...	0·5		
...	...	...	...	...	...	
...	...	...	...	...	...	
3	Bluish white	...	...	0·25	...	
3	Bluish white	...	...	0·25	...	
2	...	...	...	0·25	...	
1	Reddish yellow	4	Course	0·5	...	
3	White	...	...	0·25	...	Curved track, with the convex side below. Very quick motion.
2	White	10	Course	2·0	1·0	
2						
3						Very beautiful meteor. The nucleus increased in size quickly, and had the appearance of a round disc at last, and then disappeared suddenly like a flash of lightning, and without any sparks. The tail only commenced when the meteor had traversed half its course, and increased rapidly in length and breadth. The nucleus had left the tail when it disappeared, and the tail shone vividly after the extinction of the nucleus, and for a very short time. The morning dawn was pretty well advanced at the time of this meteor.
Brighter than Venus	Dazzling white	5	Course	1·0	0·75	
3	Yellow	...	...	0·5		
...	...	...	...	...	...	Looking for meteors at intervals every hour before midnight, but none seen.
3	White	...	...	0·5	...	
...	...	...	...	...	...	Between 2h. and 5h. 30m. frequently looked out for meteors, but none seen.
4	Whitish yellow	...	...	0·2	...	
4	...	...	...	0·2	...	
4	...	...	...	0·2	...	
2	Red	...	...	1·5	...	Moving almost horizontally.
4	...	...	...	0·5	...	
2	White	...	...	0·5	...	
5	...	...	...	0·2	...	
1	Yellow	...	...	0·5	...	
5	...	...	...	0·2	...	
5	Bluish	...	...	0·5	...	
...	...	...	...	...	...	Three small ones seen without observing particulars.
3	Bluish	...	...	1·0	...	
...	...	...	...	...	...	
1·5	Red	...	...	2·0	...	Course of 8 degrees.
...	...	...	...	0·5	...	
2	Red	...	...	...	...	Slow.
1	White	No tail		...	...	Rapid. At disappearance 1 degree below β Aurigae.
2–3	White	...	...	...	...	Length of course, 3—4 degrees.
4	...	...	...	...	...	Great velocity. Direction, from S. to N., almost horizontal.
2	White	...	...	1·0	...	Straight course.
...	...	...	...	...	...	Nothing visible.
5	...	...	...	0·5	...	

REGISTER OF METEORS—*continued.*

Running Number.	Date.	Period of Observation.	Mean Time.	Estimated Azimuth.		Estimated Altitude.		In the Neighbourhood of Constellation.	
				Appearance.	Disappearance.	Appearance.	Disappearance	Appearance.	Disappearance
	1859.	H. M. H. M.	H. M. S.	°	°	°			
274	Feb. 4	2 0 to 3 0	2 41 a.m.	...	...	...	...	From 77 Leonis to ε Virginis	
„	„ 4	3 0 to 3 40	...	...	...	...	...	...	...
275	„ 4	8 20 to 8 55	8 41 p.m.	S. 80 E.	S. 75 E.	35	28	A few degrees below γ Centauri	
276	„ 4	10 15 to 10 55	10 45 p.m.	N.	N.	...	...	From 2° E. of Procyon to β Geminorum	
277	„ 4	Chance	11 35 p.m.	N. ½ E.	N.	...	...	From γ Leonis to near λ Ursæ Majoris	
„	„ 4	9 20 to 9 55	...	...	...	...	...	...	...
278	„ 5	Chance	12 22·25 a.m.	N. 60 W.	N. 62 W.	18	10	...	...
279	„ 5	1 15 to 1 55	1 49 a.m.	N. 40 W.	N. 35 W.	38	20	...	...
280	„ 5	2 15 to 2 45	2 43 a.m.	N. 60 W.	N. 55 W.	35	30	...	...
„	„ 5	8 0 to 9 0	...	...	...	...	...	...	...
281	„ 5	9 15 to 9 55	9 53 p.m.	S. 45 W.	S. 55 W.	50	30	...	...
282	„ 5	10 5 to 10 50	10 30 p.m.	S. 25 E.	S. 30 E.	45	40	...	...
283	„ 5	10 5 to 10 50	10 45 p.m.	N. 10 E.	N. 5 E.	30	25	...	...
„	„ 6	3 0 to 4 0	...	...	...	...	...	...	...
284	„ 5	Chance	11 45 p.m.	...	...	Vertically through α		Trianguli Australis	
285	„ 5	Chance	11 48 p.m.	S. 45 W.	...	...	...	...	...
286	„ 6	9 0 to 11 0	9 55 p.m.	...	...	...	...	In Corvus	...
„		11 0 to 11 30	...	...	...	...	...	...	...
287	„ 11	12 0 to 1 0	12 10 a.m.	N. 45 W.	N. 22 W.	36	30	...	...
288	„ 11	...	12 40 a.m.	N. 40 E.	N. 30 E.	50	40	...	...
289	„ 11	Chance	1 6 a.m.	...	...	...	...	2° below Canopus	
290	„ 11	Chance	1 6 a.m.	...	...	...	...	Below Nebula Major	
„	„ 12	1 20 to 1 55	...	...	...	...	...	...	...
291	„ 16	Chance	4 5 a.m.	S.	S.	40	25	In a vertical line from α Centauri	
„	„ 16	4 25 to 4 45	...	...	...	...	...	...	...
292	„ 17	Chance	8 43 p.m.	N. 55 E.	N. 10 E.	...	...	In a line with Procyon	
293	„ 17	Chance	9 8 p.m.	N. 35 E.	N. 35 E.	40	30	...	...
294	„ 24	Chance	9 11 p.m.	S. 5 W.	S. 5 W.	48	30	Neb. maj.	Neb. minor
295	„ 24	Chance	9 11·5 p.m.	N. 30 W.	N. 35 W.	27	18	Below Orion	
296	„ 24	Chance	8 28 p.m.	...	...	...	...	Near the South Pole	
297	„ 24	Chance	8 29 p.m.	...	...	...	...	...	...
298	„ 24	Chance	10 35 p.m.	...	...	9	...	...	...
299	„ 26	Chance	12 54 a.m.	S. 10 E.	S. 15 W.	25	12	...	...
300	„ 26	Chance	1 15 a.m.	S. 3 E.	S.	16	10	...	...
301	„ 27	...	1 45 a.m.	...	...	...	...	...	...
302	„ 27	1 5 to 1 55	1 5 a.m.	S. 68 E.	S. 68 E.	20	15	...	...
303	„ 27	1 5 to 1 55	1 37 a.m.	S.	S. 22 W.	30	30	Moved towards Neb. major	
„	„ 27	2 0 to 2 45	...	...	...	...	...	...	...
304	„ 28	Chance	8 20 p.m.	S. 85 E.	N. 85 E.	8	8	...	...
305	„ 28	...	9 0 p.m.	N. 55 E.	...	18	...	...	...
306	„ 28	...	9 8 p.m.	S. 50 E.	S. 20 E.	55	...	...	...
307	„ 28	9 0 to 12 0	9 10 p.m.	...	...	...	...	In Leo	
308	„ 28	...	9 11 p.m.	S. 15 E.	S. 12 E.	20	20	...	...
309	„ 28	...	9 36 p.m.	S.	S.	32	...	...	...
310	„ 28	...	9 37 p.m.	S.E. by E.	S.E.	...	...	Horizontally from β Centauri	
311	„ 28	...	9 40 p.m.	N. 80 E.	...	28	15	...	...
312	„ 28	...	9 43 p.m.	...	...	...	...	Corvus	Leo
313	„ 28	...	9 43 p.m.	...	...	...	...	...	...
314	„ 28	...	9 46 p.m.	S. 70 E.	...	75	...	...	...
315	„ 28	...	9 46·20 p.m.	...	...	...	...	...	...
316	„ 28	...	9 47 p.m.	...	...	...	...	...	...
317	„ 28	...	10 37 p.m.	S. 70 W.	...	25	...	From 2° N.E. of Achernar course 5° N.W.	
318	„ 28	...	11 5 p.m.	E.	...	15	...	...	...
319	„ 28	...	11 45 p.m.	N. 70 W.	...	20	10	A little to the S. of Orion	
320	„ 28	...	11 48 p.m.	N. 80 E.	N.	...	...	From 2° above α Corvi towards α Leonis	
321	„ 28	...	11 50 p.m.	N. 80 E.	N. 80 E.	...	...	From γ to β Corvi	

OBSERVATIONS SENT IN BY MR. LUDWIG BECKER.

"No. 296.—A bright meteor near the South Pole, without motion. It appeared and disappeared at the same place."

"No. 297.—A meteor of the size of stars of second magnitude, 18 degrees E. by S.; off the Southern Cross. Direction of its course, towards N.E."

REGISTER OF METEORS—*continued.*

Nucleus.		Tail.		Duration.		REMARKS.
Size.	Color.	Length.	Direction.	Nucleus.	Tail.	
		°		S.	S.	
5	...	...	...	0·2	...	
...	...	...	...	...	...	
5	...	...	...	0·2	...	
3	...	...	...	0·5	...	
4	...	...	...	0·2	...	
...	...	...	...	...	...	None seen.
1	Reddish yellow	6	Course	0·5	0·75	12h. 30m. — 12h. 55m.—Observed, and none seen.
2	...	...	...	0·25	...	Remarkably quick motion.
4	...	...	...	0·25	...	
...	...	...	...	...	...	
2	White	...	...	1·0	...	Quick motion.
4	Whitish	...	...	0·5	...	
4	Whitish	...	...	0·5	...	
...	...	...	...	...	...	And at least an hour besides observed at different times, but nothing seen.
4	...	...	...	0·5	...	
3	...	...	...	1·0	...	
4	...	...	...	0·5	...	
...	...	...	...	...	...	Nothing seen. Sky covered with thin veil, which, however, showed stars of third magnitude.
2	White	...	...	1·0	...	
3	White	...	...	1·0	...	
1	Reddish	4	...	1·0	1·5	
4	...	...	...	0·5	...	Vertical.
...	...	...	...	...	...	
1	Yellow	...	...	0·5	...	
...	...	...	...	...	...	
1	Yellowish white	...	...	0·5	...	Nearly horizontal.
2	Yellowish white	...	...	0·5	...	
1	Red	...	...	2·0	...	
2	White	...	...	1·0	...	
1	Bluish white	...	...	1·0	...	
2	...	...	...	2·0	...	Moved towards N.E.
upiter	White	...	...	4·0	...	Horizontal. Observed by Mr. Ludwig Becker.—(See notes below.)
2	...	15	Course	...	...	
2	...	...	...	...	...	
...	...	...	...	...	...	
6	...	...	...	0·5	...	Almost instantaneous appearance and disappearance.
2–3	...	...	...	...	...	No distinct nucleus perceptible.
...	...	...	...	...	...	Bank in N., light veil over sky, and nothing seen.
3	White	...	...	3·0	...	Slow serpentine motion from S. to N., viz.: ~
3	White	...	...	1·0	...	
1	Brilliant reddish	...	...	2·0	...	Parallel to horizon.
...	...	...	...	...	...	
1	...	...	...	0·5	...	
...	...	...	...	...	...	
...	...	...	...	...	...	
...	...	...	...	0·5	...	
3–4	...	...	...	...	...	Brilliant and horizontal. From 2° below η Corvi, towards β Leonis.
3–4	...	...	...	...	...	Following immediately upon the previous one.
...	...	...	...	...	...	Vertical.
...	...	...	...	...	...	
...	...	...	...	...	...	Like a small flash of lightning.
1	...	...	...	...	...	
2	...	...	...	...	...	
...	...	...	...	...	...	A fine meteor.
3	...	...	...	...	...	Length of course, 20 degrees.
5	...	...	...	...	...	

"No. 2ns. A meteor of great lustre, apparently as if Jupiter traversed the firmament almost parallel to the horizon. Moved from S. to W. Disappeared without sound, about 6 degrees above the horizon. The course appeared to be 14 to 16 degrees long."

February 28.—There were five observers during the evening hours.

X.—METEOROLOGICAL SUMMARY FOR

MONTH.	Temperature of Air.			Pressure of Air.			Pressure of Vapor.			Relative Humidity.	Pressure of Dry Air.
	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Mean.
1858.	°	°	°	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	(0—1.)	Inches.
March	65·60	93·2	47·0	29·946	30·241	29·620	0·441	0·652	0·272	0·704	29·504
April	58·67	85·8	41·0	30·034	30·356	29·601	0·367	0·505	0·243	0·747	29·664
May	54·16	76·2	38·8	29·931	30·321	29·416	0·356	0·480	0·242	0·848	29·575
1st Quarter ...	59·48	93·2	38·8	29·970	30·356	29·416	0·388	0·652	0·242	0·766	29·581
Mean of all Maxima and Minima	...	69·5	51·2	...	30·043	29·902	...	0·452	0·329	...	...
June	47·90	61·8	32·6	30·041	30·400	29·548	0·298	0·417	0·166	0·885	29·742
July	47·84	59·1	35·7	29·928	30·232	29·392	0·293	0·380	0·208	0·879	29·635
August	50·86	71·1	35·5	29·788	30·075	29·269	0·297	0·422	0·194	0·803	29·491
2nd Quarter ...	48·87	71·1	32·6	29·919	30·400	29·269	0·296	0·422	0·166	0·856	29·623
Mean of all Maxima and Minima	...	56·7	42·6	...	30·005	29·842	...	0·340	0·256	...	...
September	51·55	72·2	35·9	29·786	30·320	29·197	0·298	0·400	0·195	0·783	29·488
October	57·80	86·5	39·3	29·937	30·387	29·319	0·332	0·561	0·185	0·737	29·605
November	63·08	103·2	39·5	29·833	30·232	29·417	0·403	0·660	0·228	0·707	29·430
3rd Quarter ...	57·48	103·2	35·9	29·852	30·387	29·197	0·344	0·660	0·185	0·742	29·508
Mean of all Maxima and Minima	...	67·9	48·1	...	29·956	29·750	...	0·410	0·287	...	...
December	63·46	94·3	45·3	29·735	30·153	28·872	0·418	0·650	0·252	0·701	29·317
1859.											
January	67·54	96·5	44·1	29·809	30·182	29·437	0·468	0·731	0·269	0·698	29·340
February	65·04	104·0	43·6	29·808	30·101	29·170	0·411	0·756	0·270	0·665	29·397
4th Quarter ...	65·35	104·0	43·6	29·784	30·182	28·872	0·432	0·756	0·252	0·688	29·351
Mean of all Maxima and Minima	...	76·8	55·5	...	29·869	29·698	...	0·514	0·365	...	...
Year ...	57·79	104·0	32·6	29·881	30·400	28·872	0·365	0·756	0·166	0·763	29·516
Mean of all Maxima and Minima	...	67·7	49·4	...	29·968	29·798	...	0·429	0·309	...	...

THE YEAR ENDING 1st MARCH, 1859.

Temperature of Surface Soil.			Temperature of Black Bulb Thermometer.	Amount of Cloud.	Electric Tension.			Ozone.		Hours of				Amount of Rain.
					Positive.	No. of Hours of Registration.								
Mean.	Max.	Min.	Max.	Mean.	Mean.	Neg.	0.	Day.	Night.	Fog.	Dew.	Hail.	Rain.	
°	°	°	°	(0—10.)	Parts.									Inch.
69·90	125·3	47·2	114·4	4·77	...	...	...	3·32	4·17	3·00	79·05	0·0	31·55	1·090
60·84	95·7	41·4	90·7	6·02	...	...	...	3·90	4·17	12·33	59·16	0·0	21·35	0·541
53·66	80·0	38·4	88·3	6·12	2·70	20	75	3·98	3·75	26·25	85·80	0·0	47·65	1·249
61·47	125·3	38·4	114·4	5·64	...	...	...	3·73	4·03	41·58	224·01	0·0	100·55	2·880
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
46·99	65·5	33·7	74·5	5·41	3·27	15	46	2·62	3·71	56·7	118·55	0·0	44·55	0·687
46·85	66·8	35·5	74·9	6·48	2·53	14	99	4·17	4·56	19·5	44·90	0·0	72·30	1·870
51·65	93·3	36·2	81·4	6·52	2·79	25	60	3·48	3·95	32·0	28·00	0·0	73·75	1·457
48·49	93·3	33·7	81·4	6·14	2·86	54	205	3·42	4·07	108·2	191·45	0·0	190·60	4·014
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
53·57	95·9	35·3	86·5	6·70	3·01	40	47	3·00	4·27	13·45	22·1	0·3	59·2	1·960
63·10	113·6	37·0	96·8	5·73	2·93	65	68	2·44	3·62	4·00	65·8	0·05	29·0	0·784
69·40	127·4	38·1	110·5	5·76	2·42	48	107	3·00	4·11	0·75	39·5	0·0	47·81	2 881
62·02	127·4	35·3	110·5	6·06	2·79	153	222	2·81	4·00	18·2	127·4	0·35	136·01	5·625
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
68·58	126·9	41·9	106·7	5·08	3·12	69	70	2·60	3·16	3·0	45·05	0·3	73·05	5·842
71·31	125·2	44·2	110·0	6·21	2·73	53	81	2·78	3·18	1·0	40·80	0·0	46·70	2·582
71·09	138·2	43·7	111·9	4·86	2·67	76	77	2·27	3·32	11·2	46·90	0·0	16·45	0·746
70·33	138·2	41·9	111·9	5·38	2·84	198	228	2·55	3·22	15·2	132·75	0·3	136·2	9·170
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
60·59	138·2	33·7	114·4	5·80	2·82	...	...	3·13	3·83	183·18	675·61	0·65	563·36	21·689
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

UPPER CURRENTS OF AIR.

95. There is hardly anything of more importance for the completion of the geographical system of winds in general, and for meteorological science in this country in particular, than the Currents which prevail in the upper regions of our atmosphere under certain circumstances. The theory of winds will soon become established to the greatest nicety, when careful and reliable observations of this nature have been recorded in different parts of the world. It is the more required that the fullest attention should be paid to this matter, as the number of observations hitherto made is comparatively small, and it is therefore considered desirable to publish the observations made thereon in full, in order to enable men, interested in this particular branch of science, to draw the full advantage of the same.

96. By extracting from the registers of the Observatory a complete account of the Upper Currents in the atmosphere, no registration has been used in which the Upper Current corresponded with the prevailing wind on the surface. Whenever the Upper Current differed from that on the surface, it was entered in the register along with the Force of Wind, Form of Clouds, and the exact time the observation was taken. In case a second Upper Current could be observed it was noted, and is to be found in the column for remarks. The direction given is to be understood with reference to the point of the compass towards which the corresponding clouds were drifting.

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
MARCH 1 ...	3 a.m.	N.E. by E.	0·5	Cir. Str.	N.E.	2·0	Lunar Halo.
„ 1 ...	4 a.m.	N.E. by E.	1·0	Cir. Str.	N.E.	1·0	
„ 1 ...	5 a.m.	N.E.	1·5	Cir. Str.	N.E.	0·5	
„ 1 ...	11 a.m.	N. by E.	3·0	Cir. Str.	N.N.E.	6·0	
„ 1 ...	Noon	N.	2·0	Cir. Str.	E. by S.	7·0	
„ 1 ...	1 p.m.	N.	2·5	Cum. Str.	E.	7·0	
„ 1 ...	3 p.m.	S.W.	2·5	Cum. Str.	E. by S.	9·5	
„ 1 ...	9 p.m.	S. by W.	3·5	Cum. Str.	N.E.	10·0	
„ 1 ...	11 p.m.	S.S.W.	3·5	Cum.	N.	9·0	Lunar Halo.
„ 2 ...	Midnight	S.W. by S.	3·5	Cum.	N.	7·0	
„ 2 ...	5 a.m.	S.E.	1·0	Cum. Str.	N.	8·0	
„ 2 ...	6 a.m.	S.E.	2·0	Cum. Str.	N. by E.	7·0	
„ 2 ...	1 p.m.	S.W.	3·0	Cir. Cum. & Str.	N.W.	2·5	
„ 3 ...	3 p.m.	S. ½ E.	1·0	Cir. Str.	S.S.W.	1·0	
„ 3 ...	5 p.m.	S.S.W.	3·0	Cir. Cum.	S.E.	1·0	
„ 4 ...	Noon	S.	2·5	Cir. Cum.	N.N.E.	0·5	Small Whirlwinds.
„ 4 ...	7 p.m.	S.W.	3·5	Cum. Str.	N.	4·0	
„ 4 ...	10 p.m.	S.	1·0	Cum. Str.	N.N.E.	10·0	
„ 4 ...	11 p.m.	S.E. by S.	1·0	Cum. Str.	N.E.	9·0	
„ 5 ...	Midnight	E.	0·5	Cum. Str.	N.W.	6·0	
„ 5 ...	1 a.m.	E. by N.	0·5	Cum. & Cu. Str.	N.N.W.	7·0	
„ 5 ...	4 a.m.	E.S.E.	0·5	Cum. Str.	N.N.W.	9·5	
„ 5 ...	5 a.m.	E.	1·0	Nimb.	N.	9·5	
„ 5 ...	6 a.m.	E.	1·0	Nimb. & Cu. Str.	N.	10·0	
„ 5 ...	7 a.m.	S.E.	1·0	Nimb. & Cu. Str.	N. by E.	10·0	
„ 5 ...	8 a.m.	S.S.E.	1·0	Nimb. & Cu. Str.	N. by E.	10·0	
„ 5 ...	9 a.m.	E. by S.	1·0	Nimb. & Cu. Str.	N. by E.	10·0	
„ 5 ...	10 a.m.	S.S.E.	1·0	Cu. Str.	N.E.	10·0	
„ 5 ...	11 a.m.	S.S.E.	1·0	Cu. Str.	N.E.	9·5	
„ 5 ...	Noon	S.	2·0	Cu. Str. & Cir. Cu.	N.W.	7·0	
„ 5 ...	3 p.m.	S.S.W.	2·0	Cir. Str.	N.E.	2·0	
„ 5 ...	4 p.m.	S.S.W.	2·0	Cir. Str.	N.E.	3·0	
„ 5 ...	9 p.m.	S. ½ E.	1 0	Cir. Str.	E. by N.	0·5	Dew.

UPPER CURRENTS OF AIR—*continued.*

DATE.	Hour.	Wind.		Clouds, 1st Stratum.		Amount of Cloud.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
March 6 ...	4 a.m.	N. ½ E.	0·5	Nimb. & Cu. Str.	N. by E.	9·5	
„ 6 ...	5 a.m.	E. by N.	1·5	Nimb.	S.W.	10·0	Cu. Str. N.E.
„ 6 ...	6 a.m.	E.N.E.	1·5	Cu. Str.	S.S.E.	10·0	
„ 7 ...	Midnight	...	0·0	Str.	W.	3·0	Dew. Lunar Halo.
„ 7 ...	2 a.m.	N.E.	0·5	Cir. Str.	N. by E.	2·0	Dew.
„ 9 ...	5 a.m.	S.E. by E.	1·0	Cu. Str. & Nimb.	N.	10·0	
„ 9 ...	6 a.m.	S.E. by S.	1·0	Cu. Str. & Nimb.	E.N.E.	10·0	
„ 10 ...	7 a.m.	S.	3·5	Cu. Str. & Nimb.	N.E.	10 0	
„ 10 ...	8 a.m.	S.E.	3·5	Cu. Str. & Nimb.	N.N.E.	10·0	
„ 10 ...	9 a.m.	S.E.	3·0	Cu. Str.	N. by E.	10·0	
„ 10 ...	11 a.m.	S.E.	3·0	Cu. Str. & Str.	N.N.W.	8·0	
„ 10 ...	1 p.m.	S.W. by S.	2·0	Cu. Str. & Cu.	N. by W.	9·0	
„ 11 ...	1 p.m.	S. ½ W.	0·5	Cir. Cum.	S.	3·0	
„ 11 ...	2 p.m.	S.S.W.	0·5	Cir. Cum.	S.	2·0	
„ 12 ...	7 a.m.	N.W. by N.	0·5	Cir. & Cir. Str.	S.	2·0	
„ 12 ...	6 p.m.	E. by S.	2·0	Cir. Cu. & Cu. Str.	S.	5·0	
„ 12 ...	10 p.m.	N.E.	1·0	Cu. Str.	S.	2·0	
„ 13 ...	1 a.m.	N.E.	2·0	Str.	S.	1·0	
„ 13 ...	3 a.m.	...	0·0	Str.	S.	1·0	
„ 13 ...	4 a.m.	...	0·0	Str.	S.	2·0	
„ 13 ...	11 a.m.	N.E. by N.	1·0	Cir. Str.	E.	9·0	
„ 13 ...	1 p.m.	N.E.	1·0	Cir. Str. & Cir. Cu.	S.	7·0	
„ 13 ...	2 p.m.	S.	2·0	Cir. Str. & Cu. Str.	E.	8·0	
„ 14 ...	8 a.m.	...	0·0	Cu. Str.	S.S.E.	4·0	
„ 14 ...	7 p.m.	S.E.	0·5	Cir. Str. & Cu. Str.	S.	4·0	
„ 16 ...	8 a.m.	N.N.E.	2·5	Cir. Cum.	E.	5·0	
„ 16 ...	10 a.m.	N. ½ E.	3·0	Cir. Cu. & Cu. Str.	E. by N.	8·0	
„ 16 ...	1 p.m.	N.E.	3·5	Cu. Str.	E.	8·5	
„ 18 ...	1 p.m.	S.W.	2·5	Cu. Str.	N.N.E.	9·5	Misty rain.
„ 18 ...	2 p.m.	S.W. by S.	2·5	Cu., Cu. Str.	E. by N.	8·0	Squally.
„ 18 ...	3 p.m.	S.S.W.	2·5	Cu., Cu. Str.	E.	3 0	
„ 18 ...	6 p.m.	S. ½ E.	1·5	Cu. Str.	N.W.	9·0	
„ 19 ...	4 a.m.	E. ½ W.	0·5	Cu. Str.	S.W.	9·0	
„ 19 ...	7 p.m.	N.E.	0·5	Cir. Str. & Cir. Cum.	N.E.	4·0	
„ 20 ...	6 a.m.	N. by E.	1·0	Cir. Cum.	E. by S.	5·0	
„ 20 ...	7 a.m.	N.N.E.	1·5	Cir. Cum.	S.E.	7·0	
„ 20 ...	8 a.m.	N.E. by N.	1·5	Cir. Cum.	S.E.	6·0	
„ 20 ...	11 a.m.	S.W.	2·0	Cum. Str., Cir. Cu.	E.	8·0	
„ 20 ...	1 p.m.	S. by W.	4·5	Cum. Str., Cir. Cu.	E.	8·0	
„ 20 ...	2 p.m.	S. by E.	2·5	Cum., Cu. Str.	N.	7·0	Cum., Cu. Str. E.S.E.
„ 20 ...	3 p.m.	S. ½ E.	3·5	Cum. Str.	N.	9·0	Cum. Str. E. by N.
„ 20 ...	5 p.m.	S. by E.	2·5	Cum. Str.	N.E. by E.	9·5	
„ 20 ...	6 p.m.	S.	1·0	Cum. Str.	E. by S.	10·0	
„ 20 ...	7 p.m.	S. by W.	3·0	Cir. Cum. & Nimb.	E.	8·0	
„ 20 ...	8 p.m.	S.	1·5	Cum. Str.	E.	10·0	
„ 21 ...	5 a.m.	S. by E.	1·0	Cum. Str.	E. by N.	10·0	
„ 21 ...	7 a.m.	E.	1·0	Cum. Str.	E. by S.	10·0	
„ 21 ...	10 a.m.	W. by S.	1·0	Nimb.	N.	10·0	Rain.
„ 21 ...	Noon	S.W.	1·0	Nimb.	N.N.E.	10·0	
„ 21 ...	4 p.m.	S. by E.	3·0	Cu., Cu. Str.	N. by W.	8·0	Cir. Cum. E.
„ 21 ...	6 p.m.	S.E. by S.	1·0	Nimb. & Cu. Str.	N.N.E.	10·0	
„ 21 ...	11 p.m.	...	0·0	Nimb.	E.	9·0	Rain.
„ 22 ...	Midnight	S.E. by E.	0·5	Cu. Str. & Nimb.	E.	9·0	Heavy rain.
„ 22 ...	2 a.m.	...	0·0	Nimb.	E.S.E.	3·0	
„ 22 ...	3 a.m.	S.E. by E.	1·0	Nimb.	E.S.E.	5·0	
„ 22 ...	4 a.m.	W.	1·0	Cu. Str.	E.S.E.	7·0	

UPPER CURRENTS OF AIR—*continued.*

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
MARCH 22 ...	8 a.m.	S.E. by S.	1·0	Cum. & Cu. Str.	N.N.E.	7·0	
„ 22 ...	9 a.m.	S.E.	1·0	Cir. Cu., Cu.	N.	4·0	
„ 22 ...	10 a.m.	S.E.	3·0	Cum. & Cir. Cum.	N.	7·0	
„ 22 ...	Noon	S.	3·5	Cum. & Cir. Cum.	N.W.	3·0	
„ 22 ...	2 p.m.	S.	2·5	Cir. Cum.	N.W. by W.	4·0	
„ 22 ...	3 p.m.	S. ½ W.	3·0	Cir. Cu., Cu. Str.	W.	3·0	
„ 22 ...	4 p.m.	S.S.E.	2·0	Cir. Cu., Cu. Str.	W.	7·0	
„ 22 ...	5 p.m.	S. ½ E.	2·3	Cu. Str.	W.	8·0	
„ 22 ...	8 p.m.	S.S.E.	3·0	Cum.	W.	2·0	
„ 23 ...	7 p.m.	S.E. by E.	3·0	Cir. Cum.	W.	1·0	
„ 24 ...	6 a.m.	N.E. by E.	0·5	Cu. Str. & Nimb.	S.S.E.	8·0	Rain.
„ 24 ...	7 a.m.	N.E.	0·5	Cu. Str. & Cir. Str.	S.S.E.	4·0	
„ 24 ...	9 a.m.	E.	0·5	Cu. Str., Cir. Cu.	N.W.	5·0	
„ 24 ...	11 a.m.	N.E.	2·0	Cu. Str.	W.	10·0	
„ 25 ...	6 a.m.	E. by N.	0·5	Nimb.	S.	10·0	Rain.
„ 25 ...	1 p.m.	N.	2·0	Cu. Str. & Cir. Cu.	S.S.E.	9 0	
„ 25 ...	9 p.m.	N.E.	2·0	Cir. Cum.	S.S.E.	1·0	
„ 25 ...	10 p.m.	N.N.E.	1·0	Cir. Cum.	E.	4·0	
„ 26 ...	Midnight	N.W.	1·0	Cu. Str.	E.	8·0	
„ 26 ...	7 a.m.	N.	0·5	Cu. Str.	S.S.E.	8·0	
„ 26 ...	8 a.m.	...	0·0	Cu. Str.	S.S.E.	10·0	
„ 26 ...	11 a.m.	S.W. by W.	1·0	Cu. Str., Cir. Cu.	S. by E.	10·0	
„ 26 ...	8 p.m.	S.E.	1·0	Cir. Cu.	N.N.W.	2·0	Cir. Cum. E. by N.
„ 26 ...	9 p.m.	S.E. by E.	0·5	Cu. Str.	N.N.W.	10·0	
„ 26 ...	10 p.m.	S.	1·5	Cu. Str. & Nimb.	W.	10·0	
„ 27 ...	1 p.m.	S.W.	0·5	Cum.	E.	3·0	
„ 27 ...	7 p.m.	S.	2·0	Cu., Cu. Str.	E.	9·0	
„ 27 ...	9 p.m.	S.E. by S.	0·5	Cir. Str.	E.	1·0	Dew.
„ 27 ...	10 p.m.	S.E.	0·5	Cir. Cu.	E.	9·0	
„ 28 ...	1 a.m.	N.W. by N.	1·0	Cirri.	E. by N.	3·0	Dew.
„ 28 ...	2 a.m.	N.W. by N.	0·5	Str. & Cir. Str.	E. by N.	2·0	Dew.
„ 28 ...	6 a.m.	N.W.	1·0	Cir. Cu., Cu. Str.	E.	8·0	Dew.
„ 28 ...	7 a.m.	N.W.	1·0	Cu. Str.	E.	9·5	
„ 28 ...	8 a.m.	W. ½ N.	1·0	Cu. Str.	E.N.E.	10·0	
„ 28 ...	10 a.m.	S.W. by W.	1·0	Cu. Str. & Cir. Cum.	E.	8·0	
„ 28 ...	2 p.m.	S.	2·0	Cu. Str.	E.	9·0	
„ 28 ...	3 p.m.	S.E. by S.	1·0	Cir. Cu.	E. by N.	8·0	
„ 28 ...	4 p.m.	S.	2·0	Cir. Str., Cu. Str.	E.S.E.	4·0	
„ 28 ...	5 p.m.	S.	2·0	Cir. Str., Cir Cu.	E.N.E.	6·0	
„ 28 ...	6 p.m.	S.E. by S.	1·0	Cir. Cu.	E. by N.	7·0	
„ 28 ...	9 p.m.	S.E. by S.	1·0	Cir. & Cum. Str.	N.E.	7·0	
„ 29 ...	10 a.m.	S.W. by W.	1·0	Cir. Str.	E. by S.	6·0	
„ 29 ...	Noon	S.S.W.	2·0	Cum.	E. by S.	3 0	Cirri.
„ 30 ...	2 a.m.	N.	0·5	Cu.	E.	1·0	Dew.
„ 30 ...	3 a.m.	N.	0·5	Cu.	E.	3·0	Dew.
„ 30 ...	4 a.m.	N.E. by N.	0·5	Cir. & Cu. Str.	E.	9·5	Dew.
„ 31 ...	8 a.m.	N.E.	2·0	Cir. Str.	E.S.E.	2·0	
„ 31 ...	1 p.m.	N.	3·0	Cir. Str.	S.E.	1·0	
„ 31 ..	3 p.m.	N. ½ W.	2·0	Cir. & Cir. Str.	E. by S.	7·0	
„ 31 ...	5 p.m.	N. by E.	2·0	Cir. & Cir. Str.	E.S.E.	7·0	
„ 31 ...	6 p.m.	N. ½ E.	4·0	Cir. & Cu. Str.	E.S.E.	6·0	
„ 31 ...	7 p.m.	N.N.E.	0·5	Cum. Str.	S.E.	6·0	Cir. Cum.
„ 31 ...	8 p.m.	N.N.E.	2·0	Cum. Str.	S.E.	9·0	Cir. Cum.
„ 31 ...	9 p.m.	N.N.E.	3·0	Cum. Str.	S.S.E.	9·0	Cir. Cum.
„ 31 ...	10 p.m.	N. ½ E.	3·0	Cum. Str.	S.S.E.	9·0	
APRIL 1 ...	Midnight	N.	4·0	Cum. Str.	S.S.E.	10·0	

UPPER CURRENTS OF AIR—*continued.*

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
APRIL 1 ...	1 a.m.	N.	3·0	Cu. Str. & Nimb.	E.S.E.	9·5	
" 1 ...	2 a.m.	N.	4·0	Cu. Str.	E.S.E.	10·0	
" 1 ...	3 a.m.	N.	5·0	Cu. Str. & Ci. Cu.	E.S.E.	9·5	
" 1 ...	4 a.m.	N.	5·0	Cu. Str. & Ci. Cu.	S.E.	9·5	
" 1 ...	5 a.m.	N. by E.	4·0	Cu. Str. & Ci. Cu.	S.E.	8·0	
" 1 ...	6 a.m.	N. by E.	4·0	Cu. Str. & Ci. Cu.	S.S.E.	6·0	
" 1 ...	10 a.m.	N.W. by N.	2·5	Cir. & Cir. Str.	E.S.E.	8·0	
" 1 ...	11 a.m.	N.W. by N.	3·5	Cir. & Cir. Str.	E.S.E.	6·0	
" 1 ...	Noon.	N.W.	4·5	Cir. Str. & Cu.	E.	4·0	
" 1 ...	1 p.m.	S.	2·5	Cu., Cu. Str., Cir.	E.	8·0	
" 1 ...	2 p.m.	S. by W.	4·0	Cu. Str. & Cir. Cum.	E.	9·0	
" 1 ...	3 p.m.	S. ½ W.	3·0	Cu. Str. & Cir. Cum.	E.	9·0	
" 1 ...	11 p.m.	N.W.	0·5	Cum.	E.S.E.	8·0	
" 2 ...	7 a.m.	N.	1·0	Cu. Str., Cir. Cum.	E. by S.	7·0	
" 2 ...	11 a.m.	W.N.W.	0·5	Cu. Str. & Cum.	S.S.E.	5·0	
" 2 ...	Noon.	W. ½ N.	1·0	Cir. Cu., Cu., Cu. Str.	S.E.	6·0	
" 2 ...	6 p.m.	S. ½ W.	2·5	Cu. Str.	E.N.E.	9·0	
" 3 ...	2 a.m.	W.	1·0	Cu. Str.	N.E.	10·0	
" 3 ...	3 a.m.	W.	0·5	Cu. Str.	N.E.	10·0	
" 3 ...	7 a.m.	W.	2·0	Cu. Str.	N.E. by E.	8·0	Cir. Str. W. by S.
" 3 ...	8 a.m.	S.W.	2·0	Nimb.	N.W. by N.	9·0	
" 3 ...	9 a.m.	S.W.	1·5	Nimb.	N.W.	10·0	
" 3 ...	10 a.m.	S.W. ½ W.	1·5	Nimb.	...	9·5	Cu., Cu. Str. N.
" 3 ...	11 a.m.	S.W.	2·0	Cu., Ni., & Cir. Cum.	N.	9·0	
" 3 ...	Noon.	S.S.W.	3·0	Cu., Ni., & Cir. Cum.	N.	9·0	
" 3 ...	1 p.m.	S. ½ W.	3·0	Cir. Cum. & Cum.	N.	7·0	
" 3 ...	7 p.m.	S.S.W.	1·0	Cum. Str.	N.E.	2·0	
" 3 ...	8 p.m.	E.S.E.	0·5	Cum. Str.	N.E.	4·0	
" 4 ...	Midnight	W. by S.	1·0	Cum. Str.	E.	3·0	
" 4 ...	7 a.m.	W.N.W.	1·0	Cum. Str.	N. by E.	9·0	Cir. Cum.
" 4 ...	8 a.m.	W.S.W.	2·0	Cir. Cu., Cu. Str.	...	4·0	
" 4 ...	9 a.m.	S.W. by W.	3·0	Cu. Str.	N. by E.	7·0	
" 4 ...	10 a.m.	S.W.	1·0	Cir. & Cu. Str.	N. by E.	8·0	
" 4 ...	11 a.m.	S.W.	2·0	Cu., Cu. Str.	N.	4·0	
" 4 ...	Noon	S.W.	3·0	Cu., Cu. Str.	N.W. by N.	6·0	
" 4 ...	1 p.m.	S.W. ½ S.	2·0	Cu., Cu. Str.	N.	6·0	
" 4 ...	5 p.m.	S. by E.	3·0	Cir. & Cu. Str.	N.N.E.	7·0	
" 4 ...	6 p.m.	S.E. by S	3·0	Cir & Cu. Str.	N.N.E.	9·0	
" 5 ...	Midnight	S.E. by E.	1·0	Cum. & Nimb.	N.N.E.	9·5	Rain.
" 5 ...	1 a.m.	E.S.E.	1·0	Cu. Str. & Nimb.	E.N.E.	10·0	
" 5 ...	2 a.m.	S.E. by E.	0·5	Cu. Str. & Nimb.	N.E.	10·0	
" 5 ...	3 a.m.	S.E. by E.	0·5	Cu. Str. & Nimb.	N.E.	10·0	
" 5 ...	4 a.m.	S.E. by E.	0·5	Cu. Str. & Nimb.	N.E.	10·0	
" 5 ...	9 a.m.	W.S.W.	3·0	Cu. Str. & Nimb.	N.E.	10·0	
" 5 ...	10 a.m.	S.W. by S.	3·0	Cu. Str. & Nimb.	N.W.	10·0	
" 5 ...	11 a.m.	S.W. by W.	3·0	Cu. Str. & Nimb.	N.	10·0	
" 5 ...	Noon	S.W.	3·0	Cu. Str. & Nimb.	N. by W.	10·0	
" 6 ...	3 a.m.	W.N.W.	2·0	Cu Str.	E.N.E.	10·0	
" 6 ...	4 a.m.	W.S.W.	2·0	Cu. Str.	N.E.	10·0	
" 6 ...	5 a.m.	W.	2·0	Cir. Cu., Cu., Cu Str.	E.N.E.	8·0	
" 6 ...	6 a.m.	W.	3·0	Cu. Str.	N.E.	10·0	
" 6 ...	7 a.m.	W. by N.	2·0	Cu. Str.	N.E. by E.	10·0	
" 6 ...	4 p.m.	S.W. by S.	1·0	Cu.St., Cir. Cu. & Ni.	N.	8·0	
" 6 ...	5 p.m.	S.W. by S.	0·5	Cir. Cu., Cu. Str.	E.N.E.	6·0	Cir. Cu., Cu. Str. N.W.
" 7 ...	9 a.m.	N.W. by W.	3·0	Cu. Str.	S. by E.	10·0	
" 7 ...	3 p.m.	W.N.W.	5·0	Cu. Str.	E. by N.	3·0	

UPPER CURRENTS OF AIR—*continued.*

DATE.	Hour.	Wind.		Clouds, 1st Stratum.		Amount of Cloud.	Remarks.
		Direction.	Force.	Form.	Direction.		
1858.							
April 7 ...	4 p.m.	N.W.	5·0	Cum. & Nimb.	E.	9·0	
„ 7 ...	7 p.m.	S.W. by W.	5·0	Cu. Str. & Nimb.	E.	9·0	
„ 8 ...	Midnight	N.W. by W.	6·0	Cu. Str. & Nimb.	E.	6·0	
„ 8 ...	6 a.m.	W.	5·0	Cu. Str.	N.E.	4·0	
„ 8 ...	7 a.m.	W.	4·0	Cu. Str. & Cir. Cu.	N.E.	5·0	
„ 8 ...	8 a.m.	W.	5·0	Cu. Str. & Cir. Cu.	N.E.	8·0	
„ 8 ...	9 a.m.	W. by S.	5·0	Cu. Str. & Cir. Cu.	N.N.E.	6·0	
„ 8 ...	10 a.m.	W. by S.	5·0	Cu. Str.	N.E. by E.	9·0	Cum.
„ 8 ...	11 a.m.	W. by S.	5·0	Cum. Str. & Nimb.	N.E. by E.	10·0	
„ 8 ...	4 p.m.	S.S.W.	6·0	Cu. Str.	N.	9·5	
„ 9 ...	3 a.m.	W.S.W.	1·0	Nimb. & Cu. Str.	N.E.	10·0	Rain.
„ 9 ...	4 a.m.	W.S.W.	1·0	Nimb. & Cu. Str.	N.N.E.	10·0	
„ 9 ...	5 a.m.	W.S.W.	3·0	Nimb. & Cu. Str.	N.N.E.	10·0	
„ 9 ...	8 a.m.	W.	2·0	Nimb. & Cu. Str.	N.	8·0	Rain.
„ 9 ...	4 p.m.	S. by W.	4·0	Nimb. & Cu. Str.	N. by W.	6·0	Cir. Cum.
„ 10 ...	7 a.m.	N.E.	1·0	Cir. Cu., Cir. Str.	N.E.	2·0	
„ 10 ...	10 a.m.	N.E. by N.	1·0	Cir. Str.	E.	9·5	
„ 10 ...	1 p.m.	N. by E.	3·0	Cir. Cu., Cu. Str.	N.E.	1·0	
„ 11 ...	10 p.m.	S.W. by W.	2·0	Cu. Str.	E.	8·0	
„ 12 ...	1 a.m.	N.W. by N.	1·0	Str.	E.	2·0	
„ 13 ...	1 p.m.	S. by E.	3·0	Cu. Str.	N.E. by N.	9·5	
„ 13 ...	3 p.m.	S.E.	2·0	Cu. Str.	N.N.W.	9·5	
„ 15 ...	11 a.m.	N. ½ E.	5·0	Str. & Cir. Str.	N.E. by N.	3·0	
„ 15 ...	Noon	N. ½ W.	4·0	Str. & Cir. Str.	N.E. by N.	5·0	
„ 15 ...	1 p.m.	N. by E.	4·0	Cir. Str.	N.E. by E.	5·0	
„ 16 ...	7 a.m.	S.E. by S.	1·0	Cir. Cum.	S.E.	8·0	
„ 16 ...	9 a.m.	S.E. by S.	2·0	Cir. Cum.	N.N.W.	10·0	Cu. Str.
„ 16 ...	2 p.m.	S. by W.	4·0	Cu. Str.	N.N.W.	6·0	
„ 16 ...	3 p.m.	S.	4·0	Cu. Str.	N.N.W.	9·0	
„ 16 ...	5 p.m.	S. ½ W.	3·0	Cu. Str.	N.W. by W.	9·0	
„ 16 ...	6 p.m.	S.S.W.	2·0	Cu. Str.	N.W.	10·0	
„ 16 ...	7 p.m.	S.S.E.	2·0	Cu. Str.	N.W.	10·0	
„ 16 ...	8 p.m.	S.S.E.	3·0	Cu. Str.	N.W.	10·0	
„ 18 ...	Midnight	N.N.W.	1·0	Cir. Cum.	S.	7·0	
„ 18 ...	1 a.m.	...	0·0	Cir. Cum.	S.	9·0	
„ 18 ...	11 a.m.	N.	1·0	Cir. Cum.	N.	9·0	
„ 18 ...	Noon	N. by W.	3·0	Cir. Cum.	N.N.W.	9·0	
„ 19 ...	Midnight	N.N.E.	1·0	Str.	S.	1·0	
„ 19 ...	10 a.m.	E.	0·5	Cir. Cum.	N.	1·0	
„ 21 ...	8 a.m.	N.E.	2·0	Cum. & Cir.	E.	6·0	
„ 21 ...	10 a.m.	E.N.E.	2·0	Cir. Cum.	S.E.	2·0	
„ 21 ...	11 a.m.	N.N.E.	3·0	Cir. Cum.	S.E.	1·0	
„ 21 ...	Noon	N.E. by N.	3·0	Cir. Cum.	S.S.E.	2·0	
„ 21 ...	1 p.m.	N.	3·0	Cir. Cum.	E.	3·0	
„ 21 ...	2 p.m.	N.	1·0	Cir. Cum.	S.S.E.	3·0	
„ 21 ...	3 p.m.	N.	1·0	Cu., Nimb., & Cir.	S.S.E.	3·0	
„ 22 ...	5 a.m.	N.E.	3·0	Cir. Cum.	S.	3·0	
„ 22 ...	2 p.m.	S.S.W.	4·0	Cu. Str.	N. by W.	6·0	Cir. Cum.
„ 22 ...	4 p.m.	S.	4·0	Cu. Str.	S.S.E.	9·5	
„ 22 ...	5 p.m.	S.	3·0	Cu. Str.	N.E.	9·0	Cir. Cum.
„ 22 ...	6 p.m.	S.W. by S.	3·0	Cu. Str.	N.	8·0	
„ 22 ...	8 p.m.	S.S.E.	2·0	Cu. Str.	N.	10·0	Lightning in the East.
„ 22 ...	9 p.m.	S.E.	2·0	Cu. Str.	N.	10·0	
„ 23 ...	2 p.m.	S. by W.	1·0	Cir. Str., Cu. Str.	S.E.	9·5	
„ 23 ...	3 p.m.	S. by W.	1·0	Nimb.	S. by W.	9·0	Cir. Cum.
„ 23 ...	4 p.m.	S.	1·0	Cu. Str.	S.	9·5	

UPPER CURRENTS OF AIR—*continued.*

DATE.	Hour.	Wind.		Clouds, 1st Stratum.		Amount of Cloud.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
April 24 ...	11 a.m.	N.E. by E.	1·0	Cir. Str., Cu. Str.	E.N.E.	7·0	
„ 24 ...	Noon	E. by N.	1·0	Cum., Cu. Str.	E.N.E.	3·0	Cir. Cu., Cir. Str.
„ 24 ...	1 p.m.	S.E.	0·5	Cum., Cu. Str.	E. by N.	5·0	
„ 25 ...	7 a.m.	N.E.	2·0	Cir. Cum.	E.S.E.	5·0	
„ 25 ...	8 a.m.	N.E.	2·0	Cir. Cum.	E.S.E.	5·0	
„ 25 ...	9 a.m.	N.E.	2·0	Cir. Cum.	E.S.E.	2·0	
„ 25 ...	10 a.m.	N. ½ E.	1·0	Cir. Cum.	E. by N.	3·0	
„ 26 ...	5 p.m.	S.	1·0	Cir. Str.	S.E.	2·0	Cir. Str. N.
„ 26 ...	11 p.m.	N.E.	0·5	Cir.	S.E.	4·0	Dew.
„ 27 ...	Midnight	N.E.	1·0	Cir. Cum.	S.S.E.	8·0	Dew.
„ 27 ...	1 a.m.	E.	1·0	Cir. Cum.	S.S.E.	4·0	Dew.
„ 27 ...	2 a.m.	N.E.	2·0	Cir. Cum.	E. by S.	6·0	Dew.
„ 27 ...	10 a.m.	N.E. by N.	2·0	Cir. Cu., Cu. Str.	E.	9·0	
„ 27 ...	11 a.m.	N.E. by E.	2·0	Cir. Cu.	S.E. by S.	4·0	Cir. Str.
„ 27 ...	5 p.m.	N.	2·0	Cu. Str.	E. by N.	7·0	
„ 27 ...	10 p.m.	N.E.	2·0	Cir. Cu., Cu. Str.	S.S.E.	6·0	
„ 27 ...	11 p.m.	E.	1·0	Cu. Str.	S.W.	9·5	
„ 28 ...	Midnight	N.E.	0·5	Cu. Str.	S.S.E.	9·5	
„ 28 ...	1 a.m.	N.E.	1·0	Cu. Str. & Nimb.	S.S.E.	10·0	Rain.
„ 28 ...	2 a.m.	W. by S.	1·0	Cu. Str.	S.S.E.	10·0	Rain.
„ 28 ...	3 a.m.	N.W.	1·0	Cu. Str.	S.E.	10·0	
„ 28 ...	7 a.m.	W.	0·5	Cu. Str.	S.S.E.	10·0	Rain.
„ 28 ...	8 a.m.	N.E. by N.	1·0	Nimb.	S.S.E.	10·0	Rain.
„ 28 ...	9 a.m.	N.E. by N.	3·0	Nimb.	S.S.E.	10·0	Rain.
„ 28 ...	2 p.m.	N.N.E.	1·0	Nimb.	S.E.	9·5	Cu. Str.
„ 28 ...	3 p.m.	N.N.E.	2·0	Nimb.	S.E. by S.	9·0	Cu. Str.
„ 28 ...	4 p.m.	N.N.E.	2·0	Ci. Cu., Ci. St., Cu. St.	S.E.	4·0	
„ 28 ...	5 p.m.	N. by E.	3·0	Cu. Str., Nimb.	S.S.E.	9·0	
„ 28 ...	8 p.m.	N.N.E.	3·0	Cu. Str.	S.E.	8·0	Cir. Cum.
„ 29 ...	6 a.m.	N.W.	1·0	Str. & Cu. Str.	N.	6·0	
„ 29 ...	7 a.m.	W.N.W.	1·0	Str. & Cu Str.	N.	9·5	
„ 29 ..	9 a.m.	W.N.W.	1·0	Cu. Str.	N.N.E.	9·0	
„ 29 ...	Noon	S.W.	1·0	Cu. Str., Cir. Cum.	N.	5·0	
„ 29 ...	5 p.m.	S.S.W.	2·0	Cu. Str., Nimb.	N.E.	6·0	Cir. Cu. S.E.
„ 29 ...	8 p.m.	S.S.E.	2·0	Cu. Str., Nlmb.	N.E.	9·5	
„ 29 ...	10 p.m.	S.E.	1·0	Cu. Str., Nimb.	N.E.	10·0	
„ 29 ...	11 p.m.	S.E.	1·0	Cu. Str., Nimb.	N.E.	10·0	
„ 30 ...	3 a.m.	S.E.	0·5	Nimb.	N.E.	10·0	Rain.
„ 30 ...	4 a.m.	S.W. by W.	0·5	Nimb.	E.N.E.	10·0	
„ 30 ...	7 a.m.	W. by N.	1·0	Cu. Str., Nimb.	N.N.E.	9·0	
„ 30 ...	11a.m.	S.	1·0	Cu. Str., Nimb.	W.N.W.	10·0	
„ 30 ...	Noon	S.	1·0	Cu. Str.	N.W.	10·0	Rain.
„ 30 ...	3 p.m.	S.	1·0	Cum., Cir. Cum.	N.W.	9·5	
„ 30 ...	4 p.m.	S.	1·0	Cum., Cir. Cum.	N.W.	9·0	
„ 30 ..	5 p.m.	S. ½ E.	1·0	Cum., Cir. Cum.	N.W.	...	
May 1 ...	1 a.m.	N.W.	1·0	Cir. Cu., Cu. Str.	W.N.W.	3·0	
„ 1 ...	2 a.m.	W.N.W.	1·0	Cu., Cu. Str.	N.W.	10·0	
„ 1 ...	3 a.m.	W.N.W.	1·0	Cu. Str.	N.W.	10·0	
„ 1 ...	4 a.m.	W.N.W.	1·0	Cu. Str.	N.W.	10·0	
„ 1 ...	5 a.m.	W.N.W.	1·0	Cu. Str.	N.W.	10·0	
„ 1 ...	6 a.m.	W.N.W.	1·0	Cu. Str.	N.W.	10·0	
„ 1 ...	7 a.m.	N.W. by W.	1·0	Cir. Cu., Cu. Str.	E. by S.	10·0	
„ 1 ...	4 p.m.	S.W. by S.	1·0	Cu. Str.	E.	9·0	Cir. Cu. S.W. by W.
„ 1 ...	5 p.m.	S.W. by S.	1·0	Cu. Str.	W.N.W.	10·0	Cir. Cu.
„ 1 ...	8 p.m.	S.E.	2·0	Cir. Cum.	W. by N.	10·0	
„ 1 ...	9 p.m.	S.E.	1·0	Cir. Cum.	W. by N.	10·0	

UPPER CURRENTS OF AIR—*continued.*

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
MAY 1 ...	10 p.m.	S.E.	0·5	Cir. Cum.	W. by N.	10·0	
„ 1 ...	11 p.m.	S.E. by S.	2·0	Cir. Cum.	W. by N.	10·0	
„ 2 ...	Midnight	S.E.	1·0	Cir. Cum.	W.	10·0	
„ 2 ...	1 a.m.	S.E.	1·0	Cir. Cum.	W.	10·0	
„ 2 ...	3 p.m.	S.	2·0	Cir. Str., Cir. Cum.	S.W.	2·0	
„ 2 ...	4 p.m.	S.	2·0	Cir. Cum.	S.S.W.	1·0	
„ 3 ...	9 a.m.	E.N.E.	2·0	Cir. Str.	S.E.	2·0	
„ 3 ...	11 a.m.	N.E. by E.	1·0	Cir. Str.	...	5·0	Cir. S.
„ 3 ...	1 p.m.	N.E.	3·0	Cu. Str., Cir. Str.	S.	8·0	
„ 4 ...	1 a.m.	N.E.	2·0	Cir., Cir. Str.	S. by E.	10·0	
„ 4 ...	2 a.m.	N.E.	2·0	Cir., Cir. Str.	S. by E.	10·0	Rain.
„ 4 ...	3 a.m.	N.E.	3·0	Cu. Str.	S. by E.	10·0	Cir. Cum.
„ 4 ...	4 a.m.	N.E.	1·0	Cu. Str.	S. by E.	9·0	Cir. Cum.
„ 4 ...	5 a.m.	N.E. by N.	3·0	Cu. Str.	S. by W.	8·0	Cir. Cum.
„ 4 ...	9 a.m.	N.E.	3·0	Cir., Cir.Cu., Cir.Str.	S. by W.	6·0	
„ 4 ...	1 p.m.	N.E.	6·0	Cir. Cu.	S.	4·0	Cir. S.
„ 5 ...	9 a.m.	N. by E.	3·0	Cu. Str., Cir. Cum.	S.S.E.	3·0	
„ 5 ...	3 p.m.	N.	4·0	Cu. Str., Cir. Cum.	S.S.W.	2·0	
„ 5 ...	4 p.m.	N.	3·0	Cu. Str.	S.S.W.	1·0	Cir. Str.
„ 6 ...	1 a.m.	N.E. by N.	2·0	Cir. Str.	S. by W.	1·0	
„ 6 ...	6 a.m.	N.E. by N.	2·0	Cu. Str.	S. by W.	2·0	Cir. Str. E.S.E.
„ 6 ...	2 p.m.	N.N.E.	6·0	Cir. Cu., Cu. Str.	S.	4·0	Cir. Str., Cir. Cum.
„ 6 ...	3 p.m.	W.N.W.	4·0	Nimb.	S.E.	10·0	Rain.
„ 6 ...	4 p.m.	W.	2·0	Cu. Str., Nimb.	S. by E.	9·5	
„ 6 ...	5 p.m.	N.E.	2·0	Nimb.	S.E.	9·5	Rain.
„ 7 ...	9 a.m.	N. by E.	3·0	Cu. Str.	...	3·0	Cir. Str. S.E.
„ 7 ...	11 a.m.	N. ½ E.	4·0	Cir. Str., Cir. Cu.	S.E. by S.	3·0	S.E. by S.
„ 7 ...	Noon	N.N.E.	4·0	Cum.	S.E. by E.	3·0	Cir. Str.
„ 7 ...	2 p.m.	N. ½ E.	4·0	Cir., Cum. Str.	S.S.E.	7·0	
„ 8 ...	1 a.m.	N.N.W.	0·5	Cu. Str.	S.E.	3·0	Cir. Str.
„ 8 ...	3 a.m.	N. by E.	2·0	Cir. Str.	S.E.	3·0	
„ 8 ...	4 a.m.	N.	2·0	Cirri	E.S.E.	3·0	
„ 8 ...	5 a.m.	N. ½ E.	2·0	Cu. Str.	S.S.E.	6·0	Cir.
„ 8 ...	6 a.m.	N.N.W.	2·0	Cu. Str.	E.S.E.	7·0	
„ 8 ...	9 a.m.	S.W. by W.	2·0	Cu. Str.	E.	10·0	
„ 8 ...	1 p.m.	S.W. by W.	1·0	Cu. Str.	...	9·0	Cir. Cu., Cirri. N.E. by N.
„ 8 ...	3 p.m.	S.E.	0·5	Cu., Cu. Str.	S.E.	9·0	Cir., Cu. Str.
„ 8 ...	4 p.m.	S.S.E.	1·0	Cu. Str.	S.E.	9·0	Cirri. E. by S.
„ 9 ...	4 a.m.	N. by W.	1·0	Cir., Cir. Str.	E.	4·0	Dew.
„ 9 ...	5 a.m.	N. ½ E.	1·0	Cir. Cu.	E.	8·0	Dew.
„ 9 ...	6 a.m.	N.N.E.	1·0	Cir. Cu., Cu. Str.	N.E.	8·0	Dew.
„ 9 ...	10 a.m.	N.	1·0	Cu. Str.	W.	6·0	
„ 9 ...	3 p.m.	S.S.E.	1·0	Cir. Str., Cir. Cu.	E.	5·0	
„ 9 ...	4 p.m.	S. by E.	1·0	Cu. Str.	S.S.E.	7·0	Cir. Str.
„ 9 ...	5 p.m.	S.S.E.	1·0	Cu. Str.	S.E.	9·5	
„ 11 ...	11 a.m.	N.	2·0	Cu. Str.	E.	3·0	
„ 12 ...	9 a.m.	N.	2·0	Cir. Cu.	S.W. by S.	8·0	Cir. Cu.
„ 12 ...	10 a.m.	N. ½ E.	4·0	Cir. Cu.	S.S.W.	9·0	Cir. Cu., Cir. Str.
„ 12 ...	11 a.m.	N.N.E.	5·0	Cir. Cu.	S.W. by S.	9·0	Cir. Str.
„ 12 ...	Noon	N.N.E.	8·0	Cir. Cu., Cir. Str.	S.	8·0	
„ 12 ...	3 p.m.	N.N.E.	5·0	Cu. Str., Nimb.	S.E.	8·0	Rain.
„ 12 ...	8 p m.	N.E. by E.	4.0	Strat.	S.	2·0	
„ 13 ...	7 a.m.	N.	5·0	Nimb.	E.S.E.	9·0	Rain.
„ 13 ...	8 a.m.	N.	4·0	Nimb.	E.S.E.	9·0	Cu. Str. Rain.
„ 13 ...	4 p.m.	N.W. by W.	3·0	Cu. Str., Nimb.	E.	10·0	Rain.
„ 13 ...	5 p.m.	N.W. by N	2·0	Cu. Str.	E. by N.	8·0	Rain.

UPPER CURRENTS OF AIR—*continued.*

DATE.	Hour.	Wind.		Clouds, 1st Stratum.		Amount of Cloud.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
May 14 ...	Noon	S.W.	4·0	Nimb.	N.	9·0	Cu. Str. Rain.
„ 14 ...	3 p.m.	S.	4·0	Cu. Str. & Nimb.	N. by W.	9·0	Cir.Cum. S. by W. Rain.
„ 14 ...	4 p.m.	S. by E.	3·0	Nimb.	N.N.W.	7·0	Cir., Cir. Str. S. Rain.
„ 15 ...	10 a.m.	E.S.E.	2·0	Cir. Cu., Str.	S.W.	1·0	
„ 15 ...	1 p.m.	S.S.E.	1·0	Cu., Cir. Cu.	W.	4·0	
„ 15 ...	2 p.m.	E.S.E.	2·0	Cu. Str., Cir. Cu.	S.W.	4·0	
„ 16 ...	6 a.m.	E. by N.	2·0	Cir. Cu.	S.S.E.	6·0	Dew.
„ 16 ...	7 a.m.	N.E.	1·0	Cum.	S.S.W.	4·0	Cir. Cum. S.S.E.
„ 16 ...	10 a.m.	N.E. by E.	1·0	Cir. Str., Cu. Str.	S. by W.	8·0	
„ 16 ...	11 a.m.	N.N.E.	2·0	Cir. Cu.	S.	6·0	Cir. Str.
„ 16 ...	Noon	N.	2·0	Cu. Str.	S.S.E.	4·0	Cir. Str.
„ 16 ...	1 p.m.	N. by E.	3·0	Cum., Cir. Cum.	S.	6·0	Cir. Str., Cir. Cum. E.
„ 16 ...	2 p.m.	N.	2·0	Cu. Str.	S.S.W.	9·0	
„ 17 ...	7 a.m.	N.	1·0	Cir. Cum.	E.S.E.	2·0	Cir. Str. S.S.W.
„ 17 ...	8 a.m.	N.	3·0	Cir Cum.	E. by S.	2·0	Cir. Str. S.S.W.
„ 17 ...	2 p.m.	N.	4·0	Cum., Cir.	...	3·0	Cir. Cum. S.E.
„ 17 ...	4 p.m.	N.	3·0	Cum., Cir. Cum.	S.E.	3·0	
„ 17 ...	7 p.m.	N.N.E.	3·0	Cir. Cum.	S.E.	4·0	
„ 19 ...	10 a.m.	W.S.W.	3·0	Cum.	N.N.E.	3·0	Cir. Cum. Rain.
„ 19 ...	10 p.m.	S.W.	4·0	Cu. Str., Nimb.	N.	7·0	
„ 19 ...	11 p.m.	S.W.	5·0	Cu. Str., Nimb.	N.	9·0	
„ 20 ...	5 a.m.	S.	3·0	Nimb.	N.E.	10·0	Rain.
„ 20 ...	6 a.m.	S.S.W.	3·0	Nimb.	N.E.	9·0	Rain.
„ 20 ...	7 a.m.	S.S.E.	3·0	Nimb.	N.N.E.	8·0	Cir. Cum.
„ 20 ...	9 a.m.	S.S.E.	3·0	Cu. Str., Cum.	N.	7·0	Cir. Cum.
„ 20 ...	10 a.m.	S.S.E.	2·0	Cu. Str., Cum.	N.	8·0	Cir. Cum.
„ 20 ...	11 a.m.	S.S.E.	3·0	Cu. Str., Cum.	N.	7·0	
„ 20 ...	4 p.m.	S.E. by S.	3·0	Cu. Str.	N.	8·0	Cir. Cum.
„ 21 ...	4 p.m.	N. ½ E.	1·0	Nimb.	S.E. by E.	10·0	Cu. Str.
„ 21 ...	6 p.m.	S.E. by E.	1·0	Cu. Str.	N.W.	10·0	Cum., Cu. Str. S.E.
„ 21 ...	7 p.m.	S.E.	1·0	Cir. Cum.	E.	8·0	
„ 21 ...	10 p.m.	N.W.	1·0	Cir. Cum.	E.S.E.	8·0	Dew.
„ 21 ...	11 p.m.	N.W. by N.	1·0	Cir. Cum.	E.S.E.	7·0	
„ 22 ...	9 a.m.	N.E. by N.	2·0	Cu. Str.	S.S.E.	10·0	Cir. Cum.
„ 22 ...	10 a.m.	N. ½ W.	1·0	Cu. Str.	S.E.	6·0	Cir. Cum.
„ 22 ...	3 p.m.	S.W.	1·0	Cir. Cu., Cu. Str.	E. by N.	9·0	
„ 22 ...	5 p.m.	W. ½ N.	1·0	Cir. Cu., Cu. Str.	N. by E.	9·5	
„ 22 ...	9 p.m.	W. by N.	0·5	Cir. Cum.	N.E.	10·0	
„ 22 ...	10 p.m.	W. by N.	0·5	Cir. Cum.	N.E.	10·0	
„ 23 ...	7 a.m.	N.W. by N.	1·0	Cu. Str.	N.	2·0	Cirri.
„ 23 ...	8 a.m.	N.W.	0·5	Cu. Str.	N.E.	6·0	Cir. Cu.
„ 23 ...	10 a.m.	W. by S.	1·0	Cu. Str.	N.N.E.	9·0	Cir. Cu.
„ 23 ...	11 a.m.	S.W.	1·0	Cu. Str., Nimb.	N. by E.	10·0	
„ 23 ...	10 p.m.	S.E.	1·0	Cu. Str.	N.	6·0	
„ 24 ...	1 a.m.	N.E.	0·5	Cir. Str.	S.	1·0	Dew.
„ 24 ...	2 a.m.	N.	0·5	Cir. Str.	S.	2·0	Rain.
„ 26 ...	2 p.m.	W. by S.	1·0	Cir. Cu., Cu. Str.	S.E.	6·0	
„ 27 ...	10 a.m.	N.W. by W.	1·0	Cir. Cu.	N.N.W.	10·0	Cir. Str. Fog.
„ 27 ...	11 a.m.	N.W.	1·0	Cir. Cu.	N.W.	10·0	Cir. Str.
„ 28 ...	9 a.m.	S.S.E.	2·0	Cu. Str., Nimb.	N.W.	10·0	Cir. Str.
„ 28 ...	11 a.m.	S.S.E.	1·0	Nimb.	N.W.	10·0	Cu. Str., Cu. Str.
„ 28 ...	Noon	S.	1·0	Nimb.	N.W.	10·0	Cu. Str. W. Cu. Str.
„ 28 ...	1 p.m.	S.E. by S.	1·0	Cu., Cu. Str.	W.N.W.	8·0	Cirri.
„ 28 ...	3 p.m.	S.E. by E.	2·0	Cu., Cu. Str.	W.	5·0	Cirri.
„ 28 ...	8 p.m.	S.	1·0	Cir. Cum.	N.W.	6·0	Dew.
„ 28 ...	9 p.m.	S.	1·0	Cir. Cum.	N.W.	6·0	Dew.

UPPER CURRENTS OF AIR—*continued.*

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
MAY 28 ...	10 p.m.	S.S.E.	1·0	Cir. Cum.	N.W.	9·0	
„ 29 ...	2 a.m.	N.W.	1·0	Nimb.	N.W. by N.	10·0	
„ 29 ...	3 a.m.	W.N.W.	1·0	Nimb.	N. by W.	10·0	Rain.
„ 29 ...	4 a.m.	W.N.W.	1·0	Nimb.	N.W. by N.	9·0	Rain.
„ 29 ...	10 a.m.	N.	0·5	Cu. Str., Nimb.	N.E.	7·0	Cirri.
„ 29 ...	11 a.m.	N.	1·0	Cu. Str., Cirr.	N.E.	6·0	
„ 29 ...	Noon	N.	1·0	Cu. Str., Cirr.	N.E.	6·0	
„ 29 ...	5 p.m.	N. by E.	3·0	Nimb.	E.S.E.	10·0	
„ 29 ...	6 p.m.	N. ½ E.	3·0	Nimb.	E.S.E.	10·0	Rain.
„ 29 ...	8 p.m.	N. by W.	3·0	Cu. Str.	E.S.E.	10·0	Cirri.
„ 29 ...	9 p.m.	N.W.	3·0	Nimb.	E.S.E.	10·0	Rain.
„ 29 ...	10 p.m.	N.W. by N.	3·0	Cu. Str.	E.S.E.	7·0	Cir. Cu.
„ 29 ...	11 p.m.	N. ½ W.	3·0	Cir. Cum.	E.S.E.	5·0	
„ 30 ...	Midnight	S.S.W.	3·0	Cir. Cum.	S.E.	2·0	
„ 30 ...	9 a.m.	W.N.W.	3·0	Cu. Str.	E.N.E.	3·0	Cir. Cum.
„ 30 ...	10 a.m.	W. ½ N.	3·0	Cu. Str.	E.N.E.	8·0	Cir. Cum.
„ 30 ...	3 p.m.	N.W. by W.	4·0	Cu. Str.	E. by N.	7·0	Cir. Cum.
„ 30 ...	4 p.m.	N.W. by W.	3·0	Cu. Str.	E. by N.	7·0	Cir. Cum.
„ 30 ...	7 p.m.	N.W.	3·0	Cu. Str.	E. by N.	3·0	Cir. Cum.
„ 30 ...	8 p.m.	N.W.	2·0	Cir. Cum.	E. by S.	4·0	
„ 30 ...	10 p.m.	N.W. by W.	2·0	Cir. Cum.	E.	7·0	
„ 30 ...	11 p.m.	N.W.	2·0	Cum. Str.	N.N.E.	4·0	
„ 31 ...	7 a.m.	N.E. by N.	2·0	Cum. Str.	E. by S.	10·0	Cir. Cum.
„ 31 ...	8 a.m.	N.E. by N.	3·0	Cum. Str.	E. by S.	9·0	Cir. Cum.
„ 31 ...	9 a.m.	N.E. by N.	3·0	Cum. Str.	E. by S.	9·0	Cir. Cum.
„ 31 ...	11 a.m.	N. ½ E.	3·0	Cir., Cir. Str.	S.E. by E.	3·0	
„ 31 ...	Noon	N.E. by N.	4·0	Cu. Str.	S.E. by E.	3·0	Cir. Str.
„ 31 ...	1 p.m.	N.E. by N.	5·0	Cir. Str.	E. by N.	3·0	
„ 31 ...	9 p.m.	N.E.	3·0	Cir. Str.	S.	1·0	
„ 31 ...	10 p.m.	N.E.	2·0	Cir. Str.	S.	1·0	
„ 31 ...	11 p.m.	N.E.	2·0	Cir. Str.	S.	1·0	
JUNE 1 ...	Midnight	N.E.	1·0	Cir. Cum.	S.	6·0	
„ 1 ...	1 a.m.	N.N.E.	2·0	Cu. Str.	S.	9·0	
„ 1 ...	2 a.m.	N.E. by N.	3·0	Scud	S.S.W.	8·0	Cir. Cum.
„ 1 ...	3 a.m.	N.E. by N.	3·0	Scud	S. by E.	8·0	Cir. Cum.
„ 1 ...	5 a.m.	N. by W.	3·0	Scud	S.S.W.	10·0	Cir. Cum.
„ 1 ...	7 a.m.	N. by W.	1·0	Cu. Str.	S.S.W.	8·0	Cir. Cum.
„ 1 ...	8 a.m.	N.E. by N.	1·0	Cu. Str.	S.S.W.	7·0	Cir. Cum.
„ 1 ...	1 p.m.	S.S.W.	1·0	Cir. Cum.	N.E. by E.	9·5	Cir. Cum.
„ 1 ...	3 p.m.	S.	1·0	Cu. Str.	E. by N.	9·5	Cir. Cum.
„ 1 ...	9 p.m.	N.	1·0	Cu. Str.	S.E.	10·0	
„ 1 ...	10 p.m.	N.	1·0	Cu. Str.	S.E.	10·0	
„ 2 ...	4 a.m.	W.N.W.	2·0	Cir., Cir. Str.	E. by N.	2·0	
„ 2 ...	5 a.m.	W.N.W.	3·0	Cir., Cir. Str.	E.N.E.	9·0	
„ 2 ...	11 a.m.	S.W. by W.	3·0	Cu. Str.	N.	3·0	Cir. Cum.
„ 2 ...	5 p.m.	S.W. by S.	1·0	Cu., Cir.Cu., Cu. St.	E.	2·0	
„ 3 ...	Midnight	N. by W.	1·0	Cir. Str.	S.E.	7·0	Dew.
„ 3 ...	1 a.m.	N.	1·0	Cir. Str.	S.E.	7·0	Dew.
„ 3 ...	2 a.m.	N.	1·0	Cir. Str.	S.E.	3·0	Dew.
„ 3 ...	6 a.m.	N.N.E.	1·0	Cir. Cum.	S.	9·0	
„ 3 ...	7 a.m.	N.N.E.	1·0	Cu. Str.	S.	8·0	Cir. Cum.
„ 3 ...	8 a.m.	N.E.	2·0	Cir. Cum.	S. by E.	6·0	
„ 3 ...	2 p.m.	N. ½ E.	1·0	Cum.	...	4·0	Cir. Str. N.E.
„ 3 ...	4 p.m.	E. by N.	1·0	Cir. Str.	E.	3·0	
„ 3 ...	10 p.m.	N.E.	2·0	Cu. Str.	S.	9·0	
„ 3 ...	11 p.m.	N.E.	2·0	Cu. Str.	S.	8·0	

UPPER CURRENTS OF AIR—*continued.*

DATE.	Hour.	Wind.		Clouds, 1st Stratum.		Amount of Cloud.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
June 6 ...	4 a.m.	N.E.	3·0	Cir. Str.	S.E.	1·0	
„ 6 ...	5 a.m.	N.E.	2·0	Cir. Str.	S.E.	0·5	
„ 6 ...	6 a.m.	E.N.E.	2·0	Cir. Str.	S.E. by E.	2·0	Dew.
„ 6 ...	4 p.m.	N.N.E.	3·0	Cir. Cum.	S.W.	5·0	Cum. S.E.
„ 7 ...	8 a.m.	N.N.E.	4·0	Cu. Str.	S.S.E.	8·0	Cir. Cum.
„ 7 ...	4 p.m.	N.	5·0	Cir. Cum., Cu. Str.	S.E.	7·0	Cirri.
„ 7 ...	5 p.m.	N.	5·0	Cir., Cir. Cu., Cu. St.	S.E.	6·0	
„ 7 ...	6 p.m.	N.	4·0	Cir. Str., Cu. Str.	S.E.	5·0	
„ 7 ...	7 p.m.	N.	5·0	Cum. Str.	S.E.	1·0	
„ 7 ...	10 p.m.	N.	5·0	Cum. Str.	S.E.	2·0	
„ 8 ...	10 a.m.	N.N.W.	4·0	Cir. Str.	S.E.	3·0	
„ 8 ...	11 a.m.	N.N.W.	4·0	Cir. Str.	S.E. by E.	6·0	
„ 8 ...	Noon	N. by W.	4·0	Cir. Str.	S.E.	7·0	
„ 8 ...	1 p.m.	N. by W.	3·0	Cu. Str.	S.E.	8·0	Cir. Str.
„ 9 ...	3 a.m.	N.W. by N.	3·0	Cu. Str.	E.	6·0	
„ 9 ...	4 a.m.	N.W. by N.	3·0	Cu. Str.	E. by S.	7·0	
„ 9 ...	6 a.m.	N.W.	4·0	Cu. Str.	E. by S.	8·0	Rain.
„ 9 ...	7 a.m.	W. by S.	6·0	Nimb.	N.E.	10·0	Cu. Str. Rain.
„ 9 ...	9 a.m.	W.	4·0	Cu. Str.	N.E.	7·0	Cir. Cum. N.E.
„ 9 ...	10 a.m.	W.S.W.	4·0	Cu. Str.	N.E.	7·0	Cu, Cir. Cum. N.E. Rain.
„ 9 ...	1 p.m.	S.W.	5·0	Cu. Str., Nimb.	E.	9·0	Cir. Cu. Rain.
„ 9 ...	2 p.m.	S.W. by W.	5·0	Cu. Str.	E. by N.	7·0	Cir. Cu.
„ 9 ...	3 p.m.	S.W. by W.	4·0	Cu. Str., Nimb.	E. by N.	4·0	Cir. Cu., Cir. Str.
„ 9 ...	4 p.m.	S.W. by W.	4·0	Cu. Str., Nimb.	E. by N.	6·0	Cir. Cu., Cir. Str.
„ 10 ...	9 a.m.	W. by S.	1·0	Cu. Str.	N.E.	8·0	Cir.
„ 10 ...	10 a.m.	W.	2·0	Cu. Str.	N.E.	7·0	Cir. Cum.
„ 10 ...	11 a.m.	W.	3·0	Cu. Str.	N.E.	7·0	Cir. Cum.
„ 10 ...	Noon	W. by S.	4·0	Cu. Str.	N.E.	4·0	Cirri.
„ 10 ...	1 p.m.	W. by S.	3·0	Cu. Str.	N.E.	5·0	Cirri.
„ 10 ...	2 p.m.	S.W. by W.	3·0	Cu. Str., Nimb.	E.	6·0	Cir., Cir. Cum.
„ 10 ...	5 p.m.	W.	2·0	Nimb.	E. by N.	8·0	Cu. Str., Nimb. N.N.E.
„ 11 ...	5 p.m.	S.W.	1·0	Nimb.	N.N.E.	10·0	Rain.
„ 12 ...	9 a.m.	S.W. by W.	2·0	Cu. Str., Nimb.	N.N.E.	6·0	
„ 12 ...	11 a.m.	S.S.W.	3·0	Nimb.	N.E.	6·0	Cir. Cum. Rain.
„ 12 ...	Noon	S.S.W.	2·0	Cu. Str.	...	4·0	Cir. Cum. N.
„ 12 ...	1 p.m.	S.W.	1·0	Cu. Str.	...	5·0	Cir. Cum. N.N.E.
„ 12 ...	2 p.m.	W.S.W.	1·0	Cu. Str.	...	5·0	Cir. Cum. N.N.E.
„ 12 ...	3 p.m.	S. by W.	1·0	Cu. Str.	...	5·0	Cir. Cum. N.N.E.
„ 13 ...	8 a.m.	N.E.	1·0	Cir. Cum.	N.N.W.	9·0	Fog.
„ 13 ...	9 a.m.	N.N.E.	1·0	Cir. Cu., Cu. Str.	W.N.W.	7·0	
„ 13 ...	10 a.m.	N.E. by E.	1·0	Cu. Str.	...	7·0	Cir. Cu. E. by N.
„ 13 ...	11 a.m.	N. ½ E.	0·5	Cir. Cu., Cu. Str.	E.	9·5	
„ 13 ...	Noon	N. by W.	1·0	Cu. Str.	...	8·0	Cir. Cum. E.
„ 13 ...	1 p.m.	E. ½ N.	0·5	Cum.	S.S.E.	4·0	Cir. Cum. N.E.
„ 13 ...	2 p.m.	N.E.	0·5	Cum.	E.	3·0	Cir. Cum.
„ 15 ...	2 p.m.	N.N.E.	3·0	Cir. Cum.	S.	2·0	Cir. Str.
„ 15 ...	3 p.m.	N.N.E.	2·0	Cir. Cum.	...	3·0	Cir. Str. S.S.E.
„ 16 ...	10 a.m.	N.N.E.	2·0	Cir., Cir. Str.	S. by E.	4·0	
„ 16 ...	11 a.m.	N. by E.	2·0	Cir., Cir. Str.	S. by E.	5·0	
„ 16 ...	1 p.m.	N. by W.	3·0	Cir. Cu.	...	3·0	Cir. Str. S.E.
„ 17 ...	4 a.m.	N.E. by N.	2·0	Str.	E. by N.	3·0	Dew.
„ 17 ...	5 a.m.	N.E. by N.	3·0	Str.	E. by N.	3·0	
„ 18 ...	2 a.m.	N.E.	3·0	Cir. Str.	S.	3·0	
„ 19 ...	3 p.m.	N.N.E.	4·0	Cir. Cu., Cu. Str.	S.S.E.	9·0	Cir.
„ 19 ...	4 p.m.	N.N.E.	4·0	Cir. Cu.	S.W.	6·0	Cir., Cir. Str. S.
„ 19 ...	11 p.m.	N.E. by N.	4·0	Cir. Cu.	E. by S.	6·0	

UPPER CURRENTS OF AIR—*continued.*

DATE.	Hour.	Wind.		Clouds, 1st Stratum.		Amount of Cloud.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
June 20 ...	9 a.m.	N.E.	2·0	Nimb.	S.S.W.	10·0	Cu. Str. Rain.
„ 20 ...	10 a.m.	N.E. by N.	1·0	Nimb.	S.	9·5	Cu. Str., Nimb. Rain.
„ 20 ...	Noon	N.N.E.	2·0	Cu. Str.	S.E.	9·5	Cir. Str.
„ 21 ...	Midnight	N.	2·0	Str.	E.S.E.	6·0	Cir. Cu.
„ 21 ...	1 a.m.	N.	2·0	Cu. Str.	E.S.E.	7·0	Cir. Cu.
„ 21 ...	5 a.m.	N.E. by N.	2·0	Cu. Str., Nimb.	E.S.E.	6·0	Rain.
„ 21 ...	9 a.m.	N. ½ W.	2·0	Cir. Str., Cir. Cu.	S.E. by S.	7 0	
„ 21 ...	10 a.m.	N.	2·0	Cir., Cir. Cu.	S.S.E.	8·0	
„ 21 ...	3 p.m.	N. by W.	2·0	Cu., Nimb.	E.	3 0	Cirri.
„ 21 ...	4 p.m.	N.	2·0	Cu. Str., Nimb.	E.	5·0	
„ 21 ...	5 p.m.	N.	2·0	Cu. Str., Nimb.	E.	3·0	
„ 21 ...	9 p.m.	N.W.	1·0	Nimb.	N.E.	10·0	Rain.
„ 22 ...	Midnight	N.	1·0	Cu. Str.	N.W.	9·0	Lunar Halo.
„ 22 ...	1 a.m.	N. by W.	1·0	Cir.	E. by S.	6·0	Lunar Halo. Dew.
„ 22 ...	2 a.m.	N. by W.	0·5	Cir. Str.	N.W.	5·0	Dew.
„ 22 ...	9 a.m.	W ½ S.	1·0	Cu. Str. & Nimb.	N.E.	5·0	Cirri.
„ 22 ...	10 a.m.	W. by S.	1·0	Cu. Str. & Nimb.	N.E.	9·0	
„ 22 ...	Noon	W.S.W.	2·0	Cirri, Nimb.	N.	9·0	Rain.
„ 22 ...	7 p.m.	W.	1·0	Cir. Str.	N.E.	9·0	Dew.
„ 23 ...	7 a.m.	N.	1·0	Nimb.	N.N.W.	10·0	Cir. Cu. Rain
„ 23 ...	8 a.m.	N. ½ W.	1·0	Cir. Cum.	N.N.W.	9·0	
„ 23 ...	10 a.m.	N.W. by N.	0·5	Cu. Str.	N.N.W.	9·0	Cir. Cum.
„ 23 ...	11 a.m.	N. by W.	0·5	Cu. Str.	N.N.W.	8·0	Cir. Cum.
„ 23 ...	Noon	E. by N.	0·5	Cum. Str.	N.W.	9·0	Cir. Cum.
„ 23 ...	1 p.m.	E.	0·5	Cum. Str.	N.W.	9·0	Cir. Cum.
„ 23 ...	6 p.m.	N.N.W.	1·0	Cir. Cum.	S.	7·0	
„ 23 ...	7 p.m.	N.W. by W.	1·0	Cir. Cum.	S. by W.	6·0	Dew.
„ 25 ...	5 a.m.	N. by W.	2·0	Cu. Str.	N.E.	10·0	
„ 25 ...	6 a.m.	N. by W.	2·0	Cu. Str.	N.E.	10·0	Cir. Str.
„ 25 ...	7 a.m.	N.N.E.	2·0	Cu. Str.	E. by S.	10·0	Cir. Cum. S.E.
„ 26 ...	5 a.m.	N. ½ E.	1·0	Cu. Str.	S.E.	8·0	Cir. Str.
„ 26 ...	8 a.m.	N.E. by N.	2·0	Cir. Cum.	E.	8·0	
„ 26 ...	10 a.m.	N. ½ E.	2·0	Cu. Str.	E.	9·0	Cir. Cum.
„ 26 ...	11 a.m.	N.	2·0	Cu. Str.	E.	9·0	Cir. Cum.
„ 26 ...	7 p.m.	N.E. by N.	1·0	Cir. Str.	E. by S.	10·0	
„ 26 ...	8 p.m.	N. by W.	1·0	Cir. Cum.	E. by S.	10·0	Cir. Str.
„ 27 ...	2 p.m.	N.	3·0	Cu. Str., Nimb.	S.E.	9·5	Rain.
„ 27 ...	4 p.m.	N. ½ E.	3·0	Cu. Str., Nimb.	E.	9·5	Cir. Str.
„ 27 ...	5 p.m.	N.N.E.	2·0	Cu. Str.	E.	8·0	Cir. Str.
„ 27 ...	7 p.m.	N.N.E.	2·0	Cu. Str.	E. by S.	10·0	Cir. Cum., Cir. Str.
„ 27 ...	8 p.m.	N.W.	1·0	Cu. Str.	E. by S.	10·0	Ci.Cu., Ci.St. Lun. Halo.
„ 27 ...	9 p.m.	N.N.E.	2·0	Cu. Str.	E. by S.	8·0	
„ 27 ...	10 p.m.	N. by E.	3·0	Cu. Str.	E. by S.	6·0	Cir. Cum.
„ 27 ...	11 p.m.	N.N.E.	3·0	Cir. Cum.	E. by S.	3·0	Lunar Halo. Dew.
„ 28 ...	3 a.m.	N.N.E.	1·0	Cu. Str.	E. by N.	9 0	Cir. Cum.
„ 28 ...	7 a.m.	N.E.	1·0	Cirri	E. by S.	8·0	
„ 28 ...	8 a.m.	N.E. by N	1·0	Cirri	E. by S.	5·0	
„ 28 ...	9 a.m.	N.E. ½ N.	1·0	Cirri	E. by S.	4·0	
„ 28 ...	10 a.m.	N. by W.	1·0	Cir., Cir. Str.	E.	2·0	
„ 28 ...	Noon	W. ½ S.	1·0	Ci. Str., Ci. Cu., Cu.	S.S.E.	6·0	Cir. Str.
„ 28 ...	1 p.m.	S.W.	0·5	Cir. Cu., Cum.	S.W.	7·0	Cir. Str. E.N.E.
„ 29 ...	6 a.m.	E. by S.	0·5	Cir. Cum.	N.N.W.	9·0	Dew.
„ 29 ...	11 p.m.	S.	1·0	Cir. Cum.	N.N.W.	7·0	Fog.
„ 30 ...	Midnight	E.S.E.	1·0	Cir. Str.	N.W.	2·0	Dew.
„ 30 ...	1 p.m.	S.E.	3·0	Cum., Cir. Cum.	W. by N.	3·0	
July 2 ...	9 a.m.	N.E.	1·0	Cir. Str.	S.S.E.	2·0	

UPPER CURRENTS OF AIR—*continued.*

DATE.	Hour.	Wind.		Clouds, 1st Stratum.		Amount of Cloud.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
July 2 ...	10 a.m.	N.E.	1·0	Cir., Cir. Str	S.E.	2·0	
„ 3 ...	6 a.m.	N.E.	2·0	Cir. Str.	N.E.	1·0	
„ 4 ...	1 a.m.	N.W. by W.	1·0	Cu. Str.	N.E.	6·0	Cir. Cum. Rain.
„ 4 ...	2 a.m.	W.S.W.	4·0	Nimb.	N.E.	8·0	Cu. Str.
„ 4 ...	10 a.m.	W. by S.	3·0	Nimb.	N.	8·0	Cir. Cum.
„ 4 ...	1 p.m.	E.	1·0	Cir. Cu. & Nimb.	N.	9·0	Rain.
„ 4 ...	2 p.m.	N.E.	1·0	Cir. Cu. & Nimb.	N.E.	9·0	Rain.
„ 4 ...	4 p.m.	N.W.	2·0	Cu. Str.	E.N.E.	7·0	Cir. Cum.
„ 4 ...	9 p.m.	W.S.W.	1·0	Nimb.	N.E.	5·0	Rain.
„ 4 ...	11 p.m.	N.W. by W.	3·0	Nimb.	N.E.	5·0	
„ 5 ...	11 a.m.	N.N.E.	1·0	Cu. Str., Nimb.	N.N.W.	9·0	Cir. Cum.
„ 5 ...	1 p.m.	N.N.W.	1·0	Cir. Cum.	N.W.	3·0	
„ 5 ...	2 p.m.	N.W. by N.	2·0	Cir. Cum.	N.N.W.	6·0	
„ 5 ...	3 p.m.	N W. by N.	1·0	Cu. Str.	N.W.	6·0	Cir. Cum.
„ 6 ...	Noon	S. by W.	2·0	Cir. Str., Cir. Cum.	N.	2·0	
„ 6 ...	10 p.m.	N.W.	1·0	Cum. Str.	N.	8·0	
„ 7 ...	2 a.m.	N.W. by W.	1·0	Nimb	N.E.	7·0	Cu. Str. Rain.
„ 7 ...	6 a.m.	W. by N.	2·0	Cir. Cum.	N.N.E.	4·0	
„ 7 ...	8 a.m.	N.W.	1·0	Cir. Cum., Cu. Str.	N.E.	9·0	Rain.
„ 7 ...	9 a.m.	N.W.	2·0	Cir. Cum., Cu. Str.	N.	7·0	Rain.
„ 7 ...	10 a.m.	W. by S.	3·0	Cir. Cum., Cu. Str.	N.N.E.	8·0	
„ 7 ...	11 a.m.	W.	3·0	Cir. Str., Cir. Cu.	N.E.	1·0	
„ 7 ...	Noon	W. by S.	2·0	Cum., Nimb.	N.E.	8·0	Cir. Cum.
„ 7 ...	1 p.m.	W. by S.	3·0	Cir. Cum, Nimb.	N.E.	9·0	
„ 7 ...	2 p.m.	W.	2·0	Cum., Nimb.	N.E. by N.	7·0	Cir. Cum.
„ 7 ...	11 p.m.	N.N.W.	3·0	Cir. Cum.	S.E.	5·0	
„ 8 ...	2 a.m.	N.N.E.	4·0	Cir. Str.	S.	2·0	
„ 8 ...	7 a.m.	N.	4·0	Cir. Cum., Str.	N.E.	6 0	
„ 8 ...	8 a.m.	N.	4·0	Cir. Cum., Str.	N.E.	7·0	
„ 8 ...	9 a.m.	N. ½ W.	3·0	Cir. Cum., Nimb.	N.E.	9·0	
„ 8 ...	10 a m.	N. by W.	5·0	Cu. Str., Cir. Cu.	N.E. by E.	9·0	
„ 8 ...	11 a.m.	N.N.W.	4·0	Cu. Str., Nimb.	E.	9 5	
„ 8 ...	Noon	N.W.	4·0	Cu. Str., Nimb.	E.	10·0	
„ 8 ...	1 p.m.	N.W. by W.	3·0	Cu. Str., Nimb.	E.	10·0	
„ 8 ...	2 p.m.	N.N.W.	3·0	Cir. Cu., Cu. Str.	E.	10 0	
„ 8 ...	3 p.m.	E. by N.	3·0	Cu. Str., Nimb.	E.	9·0	Cirri.
„ 8 ...	4 p.m.	S.W.	2·0	Cu. Str., Nimb.	E.S.E.	10·0	
„ 9 ...	2 a.m.	N.	5·0	Nimb.	S.W.	9·5	
„ 9 ...	6 a.m.	N.	4 0	Cu. Str.	S.W.	1·0	Cir. Str.
„ 9 ...	7 a.m.	N. by E.	4·0	Cir. Cum.	S.W.	5·0	
„ 9 ...	5 p.m.	N.N.E.	6·0	Cir. Cum.	E.	4·0	Cir., Cir. Str.
„ 10 ...	Noon	N.N.E.	4·0	Cu. Str.	S.	9·0	Cir. Str. Rain.
„ 11 ...	1 a.m.	N.W. by N.	0·5	Cu. Str.	N.E.	4·0	Dew.
„ 11 ...	3 a.m.	N.W. by N.	2·0	Cu. Str.	W.	2·0	Dew.
„ 11 ...	4 a.m.	N.W. by N.	1·0	Cu. Str., Nimb.	W.	6 0	Cir. Cum.
„ 11 ...	6 a.m.	N.W. by N.	1·0	Nimb	E.	9·0	
„ 11 ...	8 a.m.	N.E. by N.	2·0	Cir Cum.	N.W.	8·0	
„ 11 ...	9 a.m.	E.N.E.	1·0	Cum., Cir. Cum.	S.	6·0	Cir. Str.
„ 11 ...	10 a.m.	N.E. by E.	2·0	Cir. Cu., Cir. Str.	S. by E.	2·0	Cir. Str.
„ 11 ...	11 a.m.	N E. by N.	1·0	Cir. Cu , Cir. Str.	S.	4·0	
„ 11 ...	Noon	E. by N.	1·0	Cir. Cu , Cir. Str.	S.W.	8·0	
„ 12 ...	4 p.m.	N. by E.	1·0	Cu. Str., Nimb.	...	7·0	Cir., Cir. Str. W.
„ 12 ...	7 p.m.	N.N.E.	5·0	Cu. Str.	S.W.	4·0	
„ 13 ...	3 a.m.	N.E. by N.	5·0	Cu. Str.	S.E.	4·0	
„ 14 ...	7 a.m.	N. by E.	4·0	Cu. Str., Nimb.	S.E.	8·0	
„ 14 ...	3 p.m.	N.	4·0	Cu. Str., Nimb.	S.S.E.	9·0	Cir. Cu.

UPPER CURRENTS OF AIR—*continued.*

DATE.	Hour.	Wind.		Clouds, 1st Stratum.		Amount of Cloud.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
July 14 ...	5 p.m.	N. by E.	5·0	Cu. Str.	...	8·0	Cir. Cu. E.
„ 14 ...	6 p.m.	N. by E.	5·0	Cu. Str.	S.E.	4·0	Cir. Str.
„ 14 ...	10 p.m.	N.N.E.	4·0	Strat.	S.S.E.	2·0	
„ 14 ...	11 p.m.	N.E. by N.	3·0	Cir. Str.	S.S.E.	3·0	
„ 15 ...	1 a.m.	N.	6·0	Cu. Str.	S.W.	2·0	
„ 15 ...	3 a.m.	N.	7·0	Cu. Str.	S.W.	1·0	
„ 15 ...	8 a.m.	N.E. by N.	3·0	Cu. Str.	S.E.	8·0	Cir. Cu.
„ 15 ...	9 a.m.	N. by W.	3·0	Cu. Str.	S.E.	9·5	Cir. Cu.
„ 15 ...	2 p.m.	W.	6·0	Cum.	S.E.	5·0	Cirri.
„ 15 ...	4 p.m.	W.N.W.	5·0	Cum., Nimb.	E.	7·0	Cir. Cum.
„ 15 ...	5 p.m.	N.W.	2·0	Cum.	E.	4·0	Cir. Cum.
„ 15 ...	9 p.m.	N.	3·0	Cir. Cum.	S.E.	2·0	
„ 16 ...	3 a.m.	N.	4·0	Cu. Str.	S.E.	7·0	Cir. Cum.
„ 16 ...	4 a.m.	N.N.W.	4·0	Nimb.	S.E.	7·0	
„ 16 ...	7 a.m.	N.W. by N.	3·0	Cu. Str.	E.N.E.	7·0	Cirri.
„ 16 ...	10 a.m.	W. by N.	2·0	Cu. Str.	E. by N.	2·0	Cirri.
„ 16 ...	1 p.m.	W. by S.	4·0	Cum., Cu. Str.	N.E.	4·0	
„ 16 ...	7 p.m.	N.W.	2·0	Str., Nimb.	E.	10·0	Cir. Cum.
„ 16 ...	9 p.m.	N.W.	1·0	Str., Nimb.	E.	7·0	Cir. Cum.
„ 17 ...	8 a.m.	N.	1·0	Str., Nimb.	N.E.	8·0	Cir. Cum.
„ 17 ...	9 a.m.	N. ½ W.	2·0	Cir., Cir. Str.	E.	2·0	
„ 17 ...	10 a.m.	N.W.	3·0	Cum., Cir. Str.	E.	5·0	
„ 17 ...	11 a.m.	N.W. by W.	3·0	Cu. Str.	E.	8·0	Cir. Cu.
„ 17 ...	6 p.m.	W. by N.	3·0	Cir. Cu., Cu. Str.	E.N.E.	5·0	
„ 18 ...	10 a.m.	N.	0·5	Cu. Str.	E.	9·5	Cirri. Fog.
„ 18 ...	1 p.m.	W.S.W.	2·0	Cu. Str., Nimb.	E. by S.	9·5	
„ 19 ...	7 a.m.	N.E.	1·0	Cir. Cum.	E.	8·0	Fog.
„ 19 ...	8 a.m.	N.E.	2·0	Cir. Cum.	E.	8·0	Cirri. S.E.
„ 19 ...	11 a.m.	N.N.W.	1·0	Cu. Str.	...	9·5	Cir. Str., Cir. Cu. S.E.
„ 19 ...	Noon	S.W.	1·0	Cu. Str.	E. by S.	9·0	
„ 19 ...	2 p.m.	S.S.W.	1·0	Cum., Nimb.	E. by N.	5·0	Cir. Cum.
„ 19 ...	3 p.m.	S. by E.	1·0	Cum., Nimb.	E. by N.	3·0	Cir. Cum.
„ 20 ...	4 p.m.	N.	4·0	Cu. Str.	N. by E.	3·0	Cir. Str.
„ 20 ...	7 p.m.	N.E. by N.	4·0	Cir. Cum.	E.N.E.	5·0	
„ 20 ...	8 p.m.	N.E. by N.	4·0	Cir. Cum.	E.N.E.	7·0	
„ 20 ...	10 p.m.	N.	5·0	Cu. Str.	E.	10·0	Cir. Cum.
„ 21 ...	10 a.m.	N. by W.	7·0	Cu. Str.	E.S.E.	4·0	Cir. Cum.
„ 21 ...	11 a.m.	N. by W.	7·0	Cu. Str.	E.S.E.	3·0	Cir. Cum.
„ 21 ...	Noon	N. by W.	6·0	Cu. Str.	E.	2·0	Cir. Cum.
„ 21 ...	1 p.m.	N.N.W.	5·0	Cu Str.	E.	8·0	Cir Cum.
„ 21 ...	2 p.m.	N.N.W.	4·0	Cir. Cu., Cu. Str.	E.S.E.	6·0	Cirri.
„ 21 ...	3 p.m.	N.W. by N.	4·0	Cir. Cu., Cu. Str.	E.S.E.	2·0	Cirri.
„ 21 ...	4 p.m.	N.W. by N.	3·0	Cir. Cu., Nimb.	E.S.E.	10·0	Cirri.
„ 21 ...	5 p.m.	N.W. by N.	2·0	Nimb.	E.S.E.	10·0	
„ 21 ...	7 p.m.	N.W. ½ W.	3·0	Nimb.	E. by N.	9·0	Cir. Cum.
„ 21 ...	11 p.m.	N.W.	3·0	Cirri	E.	3·0	
„ 22 ...	Midnight	N.W. by W.	2·0	Cir. Str.	E.	6·0	Lunar Corona.
„ 22 ...	1 a.m.	N. by W.	2·0	Cir. Str.	E. by S.	4·0	Lunar Corona.
„ 22 ...	2 a.m.	N.N.W.	2·0	Cir. Cu., Cu. Str.	E. by S.	8·0	
„ 22 ...	4 a.m.	N. by W.	2·0	Cir. Cu., Cu. Str.	E. by S.	1·0	
„ 22 ...	5 a.m.	N. by W.	2·0	Cu. Str.	E.	2·0	
„ 22 ...	6 a.m.	N.	1·0	Cu. Str.	E.	1·0	
„ 22 ...	7 a.m.	N.	1·0	Cir. Cum.	N.	8·0	
„ 22 ...	8 a.m.	N.N.E.	3·0	Cir. Cum.	E.	8·0	
„ 22 ...	9 a.m.	N. ½ W.	1·0	Cu. Str.	E. by N.	9·5	
„ 22 ...	10 a.m.	N. ½ W.	1·0	Cu. Str.	E. by N.	9·0	Cir. Cum.

UPPER CURRENTS OF AIR—*continued.*

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
JULY 22 ...	11 a.m.	N. ½ W.	1·0	Cu. Str.	E. by N.	2·0	Cir. Cum.
„ 22 ...	Noon	N. ½ W.	1·0	Cum.	S.	4·0	Cir. Cum. E.
„ 22 ...	1 p.m.	N.W.	2·0	Cu. Str., Nimb.	S.	8·0	Cir. Cum. E.
„ 22 ...	2 p.m.	N. by W.	3·0	Cu. Str.	S.S.E.	9·0	Cir. Cum.
„ 22 ...	3 p.m.	N. by E.	2·0	Cu. Str.	S.E.	9·5	Cir. Cum.
„ 22 ...	4 p.m.	N. by E.	3·0	Cu. Str.	S.E.	9·5	
„ 22 ...	5 p.m.	N.	4·0	Cu. Str.	E.S.E.	10·0	
„ 22 ...	7 p.m.	N.	3·0	Cir. Cum.	S.E.	9·0	
„ 23 ...	7 a.m.	N.N.W.	4·0	Nimb.	E.	10·0	Cir. Cum. Rain.
„ 23 ...	8 a.m.	N.N.W.	4·0	Nimb.	E.	10·0	Cir. Cum.
„ 23 ...	11 a.m.	N.	3·0	Nimb.	E.	10·0	Cu. Str. Rain.
„ 23 ...	5 p.m.	N.W. by W.	2·0	Cu. Str., Nimb.	N.E.	6·0	Cir. Cum. E.
„ 23 ...	10 p.m.	N. by W.	3·0	Cir. Cum.	N.N.E.	1·0	
„ 24 ...	Midnight	N. ½ W.	3·0	Cu. Str., Nimb.	E.	10·0	
„ 24 ...	1 a.m.	N.	3·0	Cu. Str., Nimb.	E.	10·0	
„ 24 ...	2 a.m.	N.N.W.	3·0	Cu. Str., Nimb.	E.	10·0	Wind unsteady.
„ 24 ...	3 a.m.	W.	3·0	Cu. Str., Nimb.	E.	9·5	Rain.
„ 24 ...	3 p.m.	W. ½ S.	3·0	Cu. Str., Nimb.	N.E.	2·0	Cir. Cum.
„ 24 ...	4 p.m.	W. ½ S.	2·0	Cu. Str.	N.E.	4·0	Cir. Cum.
„ 24 ...	5 p.m.	W. by S.	2·0	Cu. Str., Nimb.	N.N.E.	9·0	
„ 24 ...	6 p.m.	W.	2·0	Cu. Str., Nimb.	N.E.	6·0	Rain.
„ 24 ...	7 p.m.	N.W. by N.	1·0	Cir. Cum.	E.N.E.	9·0	
„ 24 ...	10 p.m.	N.W.	3·0	Cir. Cum.	E.N.E.	6·0	
„ 25 ...	7 a.m.	N.	2·0	Cir. Cum., Str.	S.E.	3·0	Dew.
„ 25 ...	10 a.m.	N.	4·0	Cu. Str., Nimb.	E.S.E.	9·0	Cir. Cum.
„ 25 ...	11 a.m.	N.	3·0	Cu. Str., Nimb.	S.E.	8·0	Cirri.
„ 25 ...	Noon	N.	4·0	Cu. Str., Nimb.	S.E.	10·0	
„ 25 ...	1 p.m.	N.N.E.	4·0	Cu. Str., Nimb.	E.	10·0	
„ 25 ...	2 p.m.	N. by E.	5·0	Cu. Str.	S.S.E.	10·0	Cir. Cum.
„ 25 ...	3 p.m.	N.N.E.	4·0	Cu. Str.	S.S.E.	10·0	
„ 25 ...	4 p.m.	N. by E.	4·0	Cu. Str.	S S E.	10·0	
„ 25 ...	5 p.m.	N.N.E.	4·0	Cu. Str.	S.E.	9·5	
„ 25 ...	9 p.m.	N.	4·0	Cu. Str.	S E.	9·0	Cir. Cum.
„ 25 ...	11 p.m.	N.	4·0	Cu. Str.	S.E.	9·0	Cir. Cum.
„ 26 ...	Midnight	N. by E.	4·0	Cu. Str.	S.E.	10·0	Cir. Cum.
„ 26 ...	1 a.m.	N.	4·0	Cir. Cu.	S.E.	9·0	Cir. Str.
„ 26 ...	2 p.m.	N.E.	2·0	Cu. Str., Nimb.	S.	9·0	Cir. Str., Cir. Cu. Rain.
„ 26 ...	3 p.m.	N. by E.	3·0	Cu. Str.	S. by E.	9·0	Cir. Cu.
„ 26 ...	4 p.m.	N. by E.	4·0	Cu. Str.	S. by E.	9·5	Cir. Cu. Rain.
„ 26 ...	5 p.m.	N.	3·0	Cu. Str.	S.S.W.	9·0	Cir. Cu.
„ 26 ...	11 p.m.	N.	1·0	Cir. Cu.	S.E.	9·0	
„ 27 ...	5 a.m.	S.W. by S.	5·0	Nimb.	N.E.	10·0	Rain.
„ 27 ...	6 a.m.	S.W.	5·0	Nimb.	N.E.	6·0	
„ 27 ...	4 p.m.	S.S.W.	5·0	Cu. Str., Nimb.	N.E.	4·0	Cir. Cum. Rain.
„ 27 ...	10 p.m.	W.S.W.	5·0	Cir. Cum., Nimb.	N.E.	9·0	Hail and rain.
„ 28 ...	11 a.m.	S.E. by S.	3·0	Nimb.	N.	6·0	Cir. Cum.
„ 28 ...	8 p.m.	S.E.	3·0	Cir. Cum.	N.	7·0	
„ 29 ...	1 a.m.	W.	2·0	Cir. Cum.	N.	10·0	
„ 29 ...	8 a.m.	W. by N.	2·0	Nimb.	N.	8·0	Cir. Cum.
„ 29 ...	11 a.m.	S W.	1·0	Cir.Cu.Cu.St.,Nimb.	N.	9·0	
„ 29 ...	Noon	S.S.W.	1·0	Cu. Str., Nimb.	N.	9·5	
„ 29 ...	1 p.m.	S.S.W.	2·0	Cu. Str., Nimb.	N.	9·5	Cir. Cum.
„ 30 ...	Midnight	W.	0·5	Cu. Str.	N.	9·0	Cir. Cum. Dew.
„ 30 ...	1 a.m.	W. ½ S.	1·0	Cu. Str.	N.	10·0	
„ 30 ...	2 a.m.	W.	1·0	Cu. Str.	N.	9·5	
„ 30 ...	3 a.m.	W.	1·0	Cu. Str.	N.	10·0	

UPPER CURRENTS OF AIR—*continued.*

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
JULY 30 ...	4 a.m.	W.	1·0	Cu. Str.	...	9·0	Cir. Cum. N.W. by N.
„ 30 ...	5 a.m.	W.	1·0	Cu. Str.	N.	10·0	Cir. Cum.
„ 30 ...	2 p.m.	S.W.	2·0	Cu. Str.	...	9 0	Cir. Cum. W.N.W.
„ 30 ...	3 p.m.	S. by W.	1·0	Cir. Cu., Cu. Str.	W.N.W.	9·0	
„ 30 ...	4 p.m.	S.W. by S.	1·0	Cu. Str.	N.W.	10·0	
„ 31 ...	1 a.m.	W.	1·0	Nimb.	N.	9·0	Cir. Cum.
„ 31 ...	2 a.m.	W.	1·0	Cir. Cum.	N.	9·0	
„ 31 ...	3 a.m.	W.	1·0	Cir. Cum.	N.	10·0	
„ 31 ...	4 a.m.	W.	1·0	Cir. Cum.	N.	10·0	
„ 31 ...	8 a.m.	W.	1·0	Cir. Cum.	N.	9·0	
„ 31 ...	10 a.m.	W.	0·5	Cum. Str.	N.	9·5	Cir. Cum.
„ 31 ...	Noon	W.	1·0	Nimb.	N.E.	8·0	Cir. Cum.
„ 31 ...	3 p.m.	S. ½ W.	1·0	Cu. Str.	N.E.	9·0	Cir. Cu., Cir. Str.
„ 31 ...	4 p.m.	N.E.	1·0	Cu. Str.	N.E.	6·0	Cir., Cir. Str.
„ 31 ...	5 p.m.	N.E.	1·0	Cu. Str.	N.E.	3·0	Cir., Cir. Str.
AUGUST 1 ...	5 a.m.	N.E.	1·0	Cir. Str.	E.S.E.	1·0	Dew.
„ 1 ...	6 a.m.	N.E.	2·0	Cir. Str.	E.S.E.	1·0	
„ 1 ...	11 a.m.	N.	2·0	Cir. Cu., Cu. Str.	E.S.E.	2·0	Cir., Cir. Str.
„ 2 ...	5 a.m.	N.E. by N.	4·0	Nimb.	S.E.	10·0	Rain.
„ 2 ...	6 a.m.	N.E. by N.	4·0	Nimb.	S.E.	10·0	Cir. Cu. Rain.
„ 2 ...	7 a.m.	N.E. by N.	4·0	Cu. Str.	S.E.	9·0	Cir. Cu.
„ 2 ...	Noon	N.	4·0	Cu. Str.	S. by W.	8·0	Cir. Cu. S.E.
„ 2 ...	1 p.m.	N.	5·0	Cu. Str.	S.E.	3·0	Cir. Cu.
„ 2 ...	3 p.m.	N.	4·0	Cu. Str.	S.	6·0	Cirri. E. by S.
„ 2 ...	4 p.m.	N.	4·0	Cu. Str., Nimb.	S.E.	6·0	Cir. Cum.
„ 3 ...	9 a.m.	W.	1·0	Cu. Str.	N.	5·0	Cirri.
„ 3 ...	10 a.m.	W.	1·0	Cu. Str.	N.E.	5·0	Cirri.
„ 3 ...	3 p.m.	S.	1·0	Cu. Str.	...	6·0	Cir. Cum. N.N.E.
„ 4 ...	4 a.m.	N.E.	1·0	Cu. Str.	N.W.	10·0	Cir. Cum. Fog.
„ 4 ...	11 a.m.	N. by E.	1·0	Cir. Cum.	N.N.W.	9·5	Fog all over the sky, but not on the ground.
„ 4 ...	1 p.m.	S.W.	1·0	Cir. Cum.	W.N.W.	8·0	Cir. Cum. Sky clearing in zenith.
„ 4 ...	2 p.m.	S.	1·0	Cu. Str.	...	8·0	Cir. Cum. S.W.
„ 4 ...	3 p.m.	S.	1·0	Cu. Str.	...	2·0	Cir. Cum. W.S.W.
„ 4 ...	4 p.m.	S.	1·0	Cu. Str.	...	2·0	Cir. Cum. W.S.W.
„ 5 ...	9 a.m.	E.N.E.	1·0	Cu. Str.	...	5·0	Cir. Cum. S.E. Fog.
„ 5 ...	10 a.m.	E.N.E.	1·0	Cir. Cum.	S.E.	5·0	Cirri.
„ 5 ...	11 a.m.	N.E.	0·5	Cir. Cum.	N.W.	3·0	Cirri. S.
„ 5 ...	Noon	N.N.E.	0·5	Cir. Cum.	S.E.	1·0	
„ 5 ...	1 p.m.	N.E. by N.	0·5	Cir. Cum.	S.	3·0	
„ 5 ...	2 p.m.	N.E.	0·5	Cir. Cum.	S.	3·0	
„ 5 ...	3 p.m.	S. by E.	1·0	Cir. Cum. & Nimb.	S.	6·0	
„ 5 ...	5 p.m.	S.S.E.	1·0	Str., Nimb.	N.E.	6·0	Cir. Cum.
„ 6 ...	9 a.m.	N.N.E.	2·0	Cir. Cu.	S.	5·0	
„ 6 ...	10 a.m.	N.E. by N.	2·0	Cir. Cu., Cir. Str.	S.S.E.	5·0	
„ 6 ...	11 a.m.	N.	3·0	Cir., Cir.Cu., Cir.Str.	S.S.E.	3·0	
„ 6 ...	Noon	N. by W.	4·0	Cir., Cir. Cu.	S.E.	2·0	
„ 6 ...	1 p.m.	N.	4·0	Cu , Cir. Cu.	S.E. by E.	2·0	Cirri.
„ 6 ...	2 p.m.	N.	3·0	Nimb.	S.	4·0	Cir. Cum. E.
„ 6 ...	3 p.m.	N.N.W.	4·0	Cir. Cu., Cir. Str.	E.	4·0	
„ 6 ...	9 p.m.	N.	7·0	Cir. Str., Nimb.	E.	4·0	
„ 7 ...	9 a.m.	N.N.W.	2·0	Cu. Str.	E. by N.	3·0	Cir. Cum.
„ 7 ...	10 a.m.	N.W.	3·0	Cu. Str., Nimb.	E.	5·0	Cir. Cum.
„ 7 ...	2 p.m.	W.	2 0	Cu., Cir.Cu., Cu.Str.	S.E. by E.	4·0	
„ 7 ...	3 p.m.	W.	3·0	Cir.Cu., Cu., Cu.Str.	E.S.E.	6·0	Cirri.
„ 7 ...	5 p.m.	W.	3·0	Cu. Str., Nimb.	S.E.	9·5	Rain.

UPPER CURRENTS OF AIR—*continued.*

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
August 8 ...	10 a.m.	N. by E.	1·0	Cum., Cir. Cu.	N.E.	2·0	
„ 8 ...	11 a.m.	N.	0·5	Cum., Nimb.	N.	6·0	Cir. Cum.
„ 8 ...	1 p.m.	N.E.	1·0	Cum., Nimb.	E. by N.	5·0	Cir. Cum.
„ 8 ...	2 p.m.	N.E. by N.	0·5	Cum., Cu. Str.	E.S.E.	7·0	Cir. Cum.
„ 8 ...	4 p.m.	N.E. by N.	0·5	Cu., Cu. Str.	E.S.E.	7·0	Cir., Cir. Cum.
„ 8 ...	5 p.m.	S. by E.	1·0	Cir., Cir. Cum.	S.E.	5·0	
„ 9 ...	9 a.m.	N.E.	2·0	Cir. Cu., Cu. Str.	S. by E.	9·0	
„ 9 ...	10 a.m.	N. by E.	1·0	Cir. Cu.	S.E.	9·5	
„ 9 ...	11 a.m.	N.N.E.	2·0	Cir. Cu., Cu. Str.	S.S.E.	9·5	
„ 9 ...	Noon	N.N.E.	3·0	Cir. Cu.	S.E. by S.	8·0	Cir., Cir. Str.
„ 10 ...	11 a.m.	N. by E.	4·0	Cu. Str., Nimb.	S.S.W.	9·5	
„ 10 ...	Noon	N.N.E.	5·0	Cir. Cu., Cu. Str.	S.	9·5	
„ 10 ...	1 p.m.	N. by E.	4·0	Cu. Str.	S.W.	9·0	Cir. Cu. S. by E.
„ 10 ...	4 p.m.	E. ½ N.	0·5	Cu. Str., Nimb.	S.S.E.	10·0	
„ 11 ...	2 a.m.	S.S.W.	1·0	Nimb.	N.E.	9·0	Rain.
„ 11 ...	7 a.m.	W.	3·0	Cir. Cum., Nimb.	N.E.	9·0	Rain.
„ 11 ...	9 a.m.	W. by S.	3·0	Nimb.	N.E.	10·0	Rain.
„ 12 ...	9 a.m.	W.S.W.	6·0	Nimb.	N.E.	9·0	Cir. Cum.
„ 12 ...	10 a.m.	W.S.W.	7·0	Nimb.	N.E.	9·0	Cir. Cum.
„ 12 ...	1 p.m.	S.W.	7·0	Cum., Nimb.	N.N.E.	8·0	Cir. Cum.
„ 15 ...	10 a.m.	W.S.W.	1·0	Cu. Str.	N.E.	3·0	
„ 15 ...	5 p.m.	S. by W.	3·0	Cir. Cu., Cu. Str.	N.E.	1·0	Cirri.
„ 15 ...	8 p.m.	W.S.W.	2·0	Cu., Cir.Cu., Cu.Str.	N.E.	9·5	
„ 15 ...	9 p.m.	W.S.W.	1·0	Cir. Cu., Cu. Str.	N.E.	9·0	
„ 16 ...	5 a.m.	W.S.W.	2·0	Cu. Str.	N.E.	7·0	
„ 16 ...	7 a.m.	W.	2·0	Cu. Str.	N.E.	9·0	
„ 16 ...	11 a.m.	W. ½ S.	0·5	Cu. Str., Nimb.	N.E.	7·0	Cir. Cum.
„ 16 ...	Noon	S. ½ W.	0·5	Cu. Str.	N.E.	4·0	Cir. Cum. W.
„ 16 ...	10 p.m.	N.W.	1·0	Cum., Cir. Cum.	N.E.	5·0	Fog.
„ 17 ...	11 a.m.	S.	0·5	Cir., Cir.Cu., Cu.Str.	N.E.	9·5	
„ 17 ...	Noon	S.S.W.	0·5	Cu., Cir. Cu.	N. by W.	7·0	Cirri. E. by S.
„ 17 ...	2 p.m.	W. by S.	0·5	Cu., Cu. Str.	N.E.	9·0	Cirri.
„ 17 ...	5 p.m.	S. by E.	1·0	Cu. Str.	S.E.	6·0	Cirri.
„ 17 ...	7 p.m.	S.E.	0·5	Cu. Str.	S.E.	6·0	Dew.
„ 18 ...	9 a.m.	N.N.E.	1·0	Cir. Cum.	E. by N.	7·0	
„ 18 ...	5 p.m.	N. by E.	3·0	Cu. Str.	E.	2·0	Cirri.
„ 18 ...	6 p.m.	N. by E.	2·0	Cu. Str.	E.	2·0	Cirri.
„ 18 ...	7 p.m.	N.E. by N.	3·0	Cu. Str.	E.	10·0	Lunar Halo.
„ 18 ...	8 p.m.	N.E. by N.	4·0	Cu. Str.	E.	10·0	Lunar Halo.
„ 19 ...	7 a.m.	N.N.E.	4·0	Cu. Str.	E. by S.	9·0	
„ 19 ...	8 a.m.	N.N.E.	4·0	Cu. Str.	E. by S.	8·0	Cir. Cum.
„ 19 ...	11 a.m.	N. ½ W.	4·0	Cu. Str.	E. by S.	8·0	Cir. Cum.
„ 19 ...	Noon	N.N.W.	5·0	Cum., Nimb.	E.S.E.	8·0	Cir. Cum.
„ 19 ...	2 p.m.	W.N.W.	4·0	Cu. Str., Nimb.	S.E.	8·0	Cir., Cir. Cu. Rain.
„ 19 ...	6 p.m.	W.N.W.	6·0	Cir. Cu., Cu. Str.	E.	8·0	Cirri.
„ 19 ...	11 p.m.	N.W. by W.	4·0	Cir. Cum.	E. by S.	3·0	
„ 20 ...	3 a.m.	N.W. by N.	4·0	Cir. Cum.	E.	3·0	
„ 20 ...	4 a.m.	N.W. by N.	5·0	Cu. Str.	E.	2·0	
„ 20 ...	5 a.m.	N.W.	5·0	Nimb.	E.	5·0	Rain.
„ 20 ...	6 a.m.	N.W. by N.	4·0	Cir. Cum.	E.	3·0	Cir. Cum.
„ 20 ...	7 a.m.	N.W. by N.	4·0	Cir. Cum.	E. by S.	6·0	Cir. Cum.
„ 20 ...	8 a.m.	N.W.	4·0	Cir. Cum.	E. by S.	4·0	Cir. Cum.
„ 20 ...	9 a.m.	W.N.W.	5·0	Strat.	E.	3·0	Cir. Cum.
„ 20 ...	1 p.m.	W.N.W.	5·0	Cu. Str.	E.	9·0	Cirri.
„ 20 ...	3 p.m.	W.N.W.	4·0	Cir. Cu., Nimb.	E.	8·0	Cirri. Rain.
„ 20 ...	6 p.m.	N.W.	1·0	Cir., Cir. Cu., Cu. St.	E.	2·0	Rain.

UPPER CURRENTS OF AIR—*continued.*

DATE.	Hour.	Wind.		Clouds, 1st Stratum.		Amount of Cloud.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
UGUST 20 ...	8 p.m.	N.W.	4·0	Cir. Str.	E.	10·0	
„ 21 ...	2 a.m.	N.W.	4·0	Cum. Str.	E. by S.	4·0	Cir. Cum. Rain.
„ 21 ...	3 a.m.	N.W.	4·0	Cum. Str.	E. by S.	2·0	Cir. Cum.
„ 21 ...	7 a.m.	N.W. by W.	3·0	Cum. Str.	E. by S.	8·0	Cir. Cum.
„ 21 ...	8 a.m.	N.W. by N.	3·0	Cir. Cum.	E. by N.	4·0	
„ 21 ...	9 a.m.	N.W. by N.	2·0	Cu. Str.	E. by S.	5·0	Cir., Cir. Cu.
„ 21 ...	10 a.m.	N. by E.	3·0	Cu. Str.	E. by S.	10·0	
„ 21 ...	11 a.m.	N.N.W.	4·0	Cu. Str.	E.S.E.	10·0	
„ 21 ...	Noon	N.N.W.	4·0	Cu. Str., Nimb.	S.E. by E.	10·0	
„ 21 ...	4 p.m.	W.N.W.	5·0	Cu. Str., Nimb.	S.E.	6·0	Rain.
„ 21 ...	5 p.m.	W.N.W.	4·0	Cu. Str , Nimb.	S.E.	5·0	
„ 21 ...	9 p m.	N.W.	1·0	Cir. Cum.	E.	6·0	
„ 21 ...	10 p.m.	N.W.	5·0	Cir. Cum.	E.	4·0	
„ 21 ...	11 p.m.	N.	4·0	Cir. Cum.	E.	5·0	Lunar Corona.
„ 22 ...	Midnight	N.W. by N.	5·0	Cir. Cum.	E.	1·0	
„ 22 ...	2 a.m.	N.W. by W.	5·0	Nimb.	E.	9·0	Cir. Cum.
„ 22 ...	3 a.m.	N.W.	3·0	Cu. Str.	E.	10·0	Cir. Cum.
„ 22 ...	4 a.m.	N.W. by W.	3·0	Nimb.	E.	10·0	Cir. Cum.
„ 22 ...	5 a.m.	N.W. by W.	3·0	Nimb.	E.	10·0	Cir. Cum.
„ 22 ...	7 a.m.	N.N.W.	2·0	Cir. Cum.	E.	5·0	Cir. Cum.
„ 22 ...	11 a.m.	N.W. by N.	4·0	Cum.	E.S.E.	1·0	Cir. Str.
„ 22 ...	Noon	N.W. by N.	4·0	Cum.	S.E. by E.	1·0	
„ 22 ...	7 p.m.	N.	3·0	Cir. Cum.	E.	3·0	
„ 22 ...	10 p.m.	N.	4·0	Cir. Cum.	E.	2·0	Cir. Str.
„ 23 ...	Midnight	N.	1·0	Cir., Cir. Str.	E. by S.	3·0	
„ 23 ...	1 a.m.	N.	3·0	Cirri.	E.	7·0	
„ 23 ...	2 a.m.	N.	4·0	Cir., Cir. Str.	E.	5·0	
„ 23 ...	3 a.m.	N.	4·0	Cir., Cir. Str.	E.	3·0	
„ 23 ...	4 a.m.	N. by W.	4·0	Cir., Cu. Str.	E.	8·0	
„ 23 ...	6 a.m.	N. ½ E.	4·0	Str., Cir. Str., Cir. Cu.	E.	6·0	
„ 23 ...	1 p.m.	N.	6·0	Cir. Cu., Cu. Str.	E. by S.	3·0	
„ 23 ...	2 p.m.	N. by E.	4·0	Cir. Cu., Str.	E. by S.	6·0	
„ 23 ...	3 p.m.	N. ½ E.	5·0	Cir., Cir. Str.	E.S.E.	2·0	
„ 23 ...	8 p.m.	N.E. ½ N.	5·0	Cir. Cu.	S.E.	8·0	
„ 23 ...	9 p.m.	N.E.	5·0	Cir. Cu.	S.E.	8·0	
„ 23 ...	10 p.m.	N.N.E.	5·0	Cir. Cu.	S.E.	8·0	
„ 24 ...	Midnight	N.N.E.	6·0	Cir. Cum.	E.	8·0	
„ 24 ...	1 a.m.	N.	7·0	Cir. Cum.	E.	8·0	
„ 24 ...	3 a.m.	N.N.E.	6·0	Cir. Cum.	S.E.	6·0	
„ 24 ...	4 a.m.	N.N.E.	5·0	Cir. Str.	S.E.	1·0	
„ 24 ...	5 a.m.	N. by E.	4·0	Cir. Cum.	S.E.	1·0	
„ 24 ...	7 a.m.	N.W. by N.	4·0	Nimb.	E. by S.	8·0	Cir. Cu.
„ 24 ...	8 a.m.	N.N.E.	7·0	Cu. Str.	S.E.	8·0	Cir. Cu. E. by S.
„ 24 ...	9 a.m.	N. ½ W.	7·0	Cu. Str.	S.E.	8·0	Cir. Cu. E. by S.
„ 24 ...	2 p.m.	W.N.W.	7·0	Cu. Str., Nimb.	S.E.	8·0	Cir. Cu.
„ 24 ...	4 p.m.	W.	7·0	Cu. Str., Nimb.	S.E.	9·0	
„ 24 ...	7 p.m.	N.W.	2·0	Cir. Cu.	E.	5·0	
„ 24 ...	9 p.m.	N.N.W.	1·0	Cir. Str.	E.N.E.	7·0	Dew.
„ 24 ...	10 p.m.	N.W. by W.	2·0	Cir., Cu. Str., Cir. Cu.	N.E. by E.	4·0	Lunar Corona.
„ 25 ...	2 a.m.	N.W.	1·0	Cir. Cum., Str.	N.E.	1·0	
„ 25 ...	5 a.m.	W. ½ N.	1·0	Cir. Cum., Cu. Str.	N.E.	2·0	
„ 25 ...	9 a.m.	W.	2·0	Cir. Cum.	N.E.	4·0	
„ 26 ...	7 a.m.	N.E. by N.	3·0	Strat.	E.	3·0	Cirri.
„ 27 ...	9 a.m.	E.N.E.	2·0	Cir. Str., Str.	E. by S.	3·0	
„ 27 ...	10 a.m.	N.E.	1·0	Strat.	S.E.	3·0	Cir. Cu., Cir. Str.
„ 27 ...	Noon	N.E. by E.	2·0	Strat.	S.E.	3·0	Cir. Cu., Cir. Str.

UPPER CURRENTS OF AIR—*continued.*

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
AUGUST 27 ...	6 p.m.	N.N.E.	2·0	Cir. Cu., Cu. Str.	S.E.	5·0	
„ 28 ...	Midnight	N.E.	1·0	Cir. Cu., Nimb.	E.	7·0	
„ 28 ...	1 a.m.	N.E.	1·0	Cu. Str.	E.	6·0	Cir. Cum.
„ 28 ...	3 a.m.	E.	1·0	Cir. Cu.	S.E.	3·0	
„ 28 ...	4 a.m.	S.	1·0	Cir. Cu., Nimb	S.E.	8·0	Rain.
„ 28 ...	5 a.m.	E.	0·5	Cir. Cu., Nimb.	S.E.	7·0	
„ 28 ...	8 a.m.	S.W.	1·0	Cir. Cum.	E. by S.	5·0	
„ 28 ...	9 a.m.	S. ½ E.	1·0	Cir. Cum.	E. by S.	5·0	Fog.
„ 28 ...	10 a.m.	N.N.W.	1·0	Cir. Cum.	E. by S.	2·0	
„ 28 ...	10 p.m.	N.E.	3·0	Strat.	E.	5·0	Cir. Cum.
„ 29 ...	3 a.m.	N.E.	1·0	Cu. Str., Nimb.	S.E.	3·0	Cir. Cum. Rain.
„ 29 ...	2 p.m.	N.W.	3·0	Nimb.	E.S.E.	7·0	Cir. Str. Rain.
„ 29 ...	3 p.m.	N.W.	4·0	Nimb.	E.S.E.	9·0	Cir. Str. Rain.
„ 30 ...	2 a.m.	N.W.	3·0	Nimb.	E.	10·0	Rain.
„ 30 ...	3 a.m.	N.W. by W.	4·0	Nimb.	E.	8·0	Cir. Cum.
„ 30 ...	4 a.m.	N.W. by W.	2·0	Nimb.	E.	9·0	Cir. Cum.
„ 30 ...	7 a.m.	N.W.	4·0	Nimb.	E.	10·0	Rain.
„ 30 ...	8 a.m.	N.W. ½ N.	3·0	Nimb.	E.	10·0	
„ 30 ...	9 a.m.	N.W. by W.	3·0	Cu. Str, Nimb.	E.	10·0	Rain.
„ 31 ...	2 a.m.	W. by N.	2·0	Cir. Cu., Cu. Str.	N.E.	9·0	
„ 31 ...	4 a.m.	N.W. by W.	2·0	Cir. Cu., Cu. Str.	E.N.E.	9·5	
„ 31 ...	5 a.m.	N.W. by N.	2·0	Cu. Str.	E.	10·0	
„ 31 ...	2 p.m.	W.S.W.	3·0	Cu. Str.	E.	9·0	Cir. Cu.
„ 31 ...	3 p.m.	W.S W.	3·0	Cu. Str.	E.	8·0	Cir. Cu.
„ 31 ...	5 p.m.	S.W.	2·0	Cir. Cu , Cu. Str.	E.	6·0	Cir. Str.
SEPT. 1 ...	7 a.m.	N.	1·0	Cum. Str.	S.E.	5·0	Cir. Strat.
„ 1 ...	9 a.m.	N.N.W.	2·0	Cum. Str.	S. by E.	5·0	Cir. Strat.
„ 1 ...	10 a.m.	N.W.	1·0	Cu. Str., Nimb.	E.	6·0	Cir. Cum.
„ 1 ...	2 p.m.	N.N.W.	3·0	Cir., & Cir. Cu.	S.E.	2·0	Cir. Str.
„ 2 ...	4 a.m.	N.	6·0	Cu. Strat.	S.E.	6·0	Cir. Cum.
„ 2 ...	8 a.m.	N.N.E.	5·0	Cu. Strat.	S.E.	9·0	Cir. Cum.
„ 2 ...	9 a.m.	N. ½ E.	4·0	Cu. Strat.	S.E.	8·0	Cir. Cum.
„ 3 ...	7 a.m.	S.	2·0	Strat.	N.W.	6·0	Cir. Cum. N.W. Fog $0^h{\cdot}25$.
„ 3 ...	8 a.m.	S. ½ E.	3·0	Cir. Cum.	N.W.	6·0	
„ 3 ...	10 a.m.	S.	4·0	Cu. Str.	N.N.W.	9·5	Cir. Cum. N.N.W.
„ 3 ...	11 a.m.	S. ½ W.	4·0	Cu. Str.	N. by W.	10·0	
„ 4 ...	6 a.m.	S. ½ E.	1·0	Cir. Cu., & Cu. Str.	N.W.	6·0	Dew $0^h{\cdot}2$.
„ 4 ...	3 p.m.	S.E.	2·0	Cir. Cum.	N,W.	4·0	Cirri. S.W.
„ 5 ...	Noon.	N.	1·0	Cum., & Nimb.	...	8·0	Cir. Cum. S.W.
„ 5 ...	2 p.m.	N. by W.	1·0	Cu., Cu. Str.	E.	7·0	Cir. Str.
„ 5 ...	3 p.m.	S. by W.	2·0	Cir. Cu., Nimb.	S.	8·0	Cir. Str.
„ 5 ...	4 p.m.	S. by E.	1·0	Cir. Cu., Nimb.	S.	8·0	Cir. Str.
„ 6 ...	9 a.m.	W.S.W.	2·0	Cu. Str., Nimb.	N.E.	9·5	Rain $0^h{\cdot}6$.
„ 6 ...	10 a.m.	W. by S.	2·0	Nimb.	N.E.	10·0	Rain $0^h{\cdot}9$.
„ 7 ...	7 & 8 a.m.	W. by S.	6·0	Nimb.	N.E.	10·0	
„ 7 ...	10 a.m.	W. by S.	5·0	Nimb.	E.N.E.	10·0	Rain $0^h{\cdot}2$.
„ 8 ...	9 a.m.	W. by N.	2·0	Cu. Str.	N.E. by E.	9·0	Cir. Cum.
„ 8 ...	10 a.m.	N. by W.	2·0	Cu. Str., Nimb.	N.E. by E.	9·0	Cir. Cum.
„ 8 ...	11 a.m.	W.N.W.	1·0	Cu. Str., Nimb.	N.E. by E.	8·0	Cir. Cum.
„ 8 ...	2 & 3 p.m.	N. ½ W.	1·0	Cu. Str., Cir. Cu.	E by N.	10·0	
„ 9 ...	6 a.m.	N. by E.	3·0	Cu. Strat.	S.E.	4·0	Cir. Cum.
„ 9 ...	7 a.m.	N E.	4·0	Cu. Strat.	E.S.E.	9·0	Cir. Cum.
„ 9 ...	8 a.m.	N. ½ W.	4·0	Cu. Strat.	E.S.E.	9·0	Cir. Cum.
„ 9 ...	9 a.m.	N. ½ W.	4·0	Cu. Strat.	E.S.E.	9·0	
„ 9 ...	10 a.m.	N. by W.	4·0	Cu. Strat.	E.S.E.	9·0	Cir. Cum.
„ 9 ...	2 p.m.	W. ½ S.	4·0	Cumulus	E. by S.	3·0	

UPPER CURRENTS OF AIR—*continued.*

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
SEPT. 9 ...	3 p.m.	S.	3·0	Cir. Cum.	E. by S.	5·0	
„ 9 ...	4 p.m.	S.W. by S.	2·0	Cir. Cum.	E. by S.	3·0	
„ 10 ...	10 a.m.	N.	4·0	Cirri	S.E.	6·0	
„ 10 ...	2 to 4 p.m.	N.	3·0	Cir., Cir. Str.	S.E.	5·0	
„ 10 ...	5 p.m.	N.N.E.	4·0	Cir. Cu., Cu. Str.	S.E.	9·0	
„ 10 ...	10 p.m.	N.N.E.	2·0	Nimb.	S.	9·0	
„ 10 ...	11 p.m.	N. by W.	3·0	Cum. Str.	S.	9·5	
„ 11 ...	6 a.m.	W. ½ S.	1·0	Nimb.	S.E.	10·0	Cir. Str.
„ 11 ...	7 a.m.	S.W.	1·0	Strat.	S.S.E.	10·0	Cir. Cu.
„ 11 ...	8 a.m.	W.	1·0	Strat.	S.S.E.	10·0	
„ 11 ...	10 a.m.	N.N.W.	1·0	Nimb.	E.	10·0	
„ 11 ...	11 a.m.	W.S.W.	3·0	Nimb.	E.	10·0	
„ 12 ...	Noon	W. by S.	3·0	Nimb.	N.E.	5·0	Cir. Cum.
„ 12 ...	2 p.m.	S S.W.	3·0	Nimb.	...	6·0	Cir. Cum. E.N.E.
„ 12 ...	5 p.m.	S.W.	2·0	Cu. Str.	...	3·0	Cir. Cum. E. by N.
„ 12 ...	8 p.m.	W. by S.	4·0	Nimb.	...	8·0	Cir. Cum. N.E.
„ 13 ...	Midnight	W.	3·0	Nimb.	N.E.	9·0	
„ 13 ...	2 p.m.	E.N.E.	1·5	Cir. Cu., Cir. Str.	E. by N.	7·0	
„ 13 ...	4 p.m.	N.E. by E.	2·0	Cir. Cu., Cir. Str.	E. by S.	8·0	
„ 13 ...	5 p.m.	N.E. by E.	1·0	Cir. Cu., Cir. Str.	E.	9·0	
„ 14 ...	9 a.m.	N. ½ E.	5·0	Cir. Cu., Cu. Str.	S.E. by S.	2·0	Cir. Cum.
„ 14 ...	10 a.m.	N.	5·0	Cir. Cu., Cu. Str.	S.E.	6·0	Cir. Cum.
„ 14 ...	11 a.m.	N. by W.	6·0	Cir. Cum.	S.E.	7·0	
„ 14 ...	Noon	N.	5·0	Cir. Cum.	S.S.E.	6·0	
„ 14 ...	1 p.m.	N.	5·0	Cum., Cir. Cum.	S.E.	6·0	
„ 14 ...	3 p.m.	N.N.W.	5·0	Cum., Nimb.	S.E.	5·0	Cir. Cum.
„ 14 ...	4 to 6 p.m.	N.	4·0	Cum., Nimb.	S.E.	4·0	Cir. Cum.
„ 15 ...	Midnight	N.W.	5·0	Nimb.	E.	10·0	
„ 15 ...	1 a.m.	N. by W.	3·0	Nimb.	E.	6·0	
„ 15 ...	2 a.m.	N.W. ½ N.	3·0	Cu. Str.	E.	6·0	
„ 15 ...	4 a.m.	N.E. ½ N.	1·5	Nimb.	E.N.E.	8·0	
„ 15 ...	Noon	W.N.W.	6·0	Cum., Cir. Cu.	S.S.E.	6·0	
„ 15 ...	2 p.m.	N.W.	7·0	Cum., Cir. Cu.	E.S.E.	6·0	Cir. Cum.
„ 15 ...	3 p.m.	W.	7·0	Nimb.	S.E.	9·0	
„ 16 ...	6 a.m.	N.W.	2·0	Cu. Str. & Nimb.	E.	6·0	A few drops of rain.
„ 16 ...	7 a.m.	N.W.	3·0	Cum.	E. by S.	4·0	Cir. Cum.
„ 16 ...	Noon	N.W.	3·0	Cu. Str. & Nimb.	E. by N.	8·0	Cir. Cum. Light squalls.
„ 16 ...	6 p.m.	W. by N.	2·0	Cu. Str.	...	6·0	Cir. Cum. S.E. by E.
„ 16 ...	7 p.m.	N.W.	3·0	Cir. Cum.	E.N.E.	6·0	
„ 17 ...	5 a.m.	N.	3·0	Cu. Str.	S.E.	6·0	
„ 17 ...	7 a.m.	N.W.	1·0	Strat.	E.S.E.	8·0	Cir. Cum. Very clear.
„ 17 ...	8 a.m.	N.W. ½ N.	2·0	Strat.	E.S.E.	8·0	Cirri. Very clear.
„ 17 ...	10 a.m.	W. by N.	2·0	Cumulus	S.E.	3·0	Cir. Cum.
„ 17 ...	4 p.m.	N.W.	0·5	Cir. Cum.	E.S.E.	3·0	
„ 18 ...	7 a.m.	N.E.	2·0	Cu. Str.	S.E.	2·0	Cir. Cum. Very clear.
„ 18 ...	9 p.m.	N. by E.	6·0	Nimb.	S.E.	9·0	Cir. Cum. Very clear.
„ 18 ...	11 p.m.	N.	6·0	Cu. Str.	S.E.	9·0	Cir. Cum. Very clear.
„ 19 ...	Midnight	N. by E.	4·0	Cir. Cum.	E.N.E.	10·0	Very clear.
„ 19 ...	1 a.m.	N. by W.	5·0	Cir. Cum.	E. by N.	7·0	
„ 19 ...	3 a.m.	N. by W.	5·0	Cu. Str.	E. by N.	6·0	Cir. Cum. Squally.
„ 19 ...	4 a.m.	N.N.W.	4·0	Cu. Str.	E. by N.	8·0	Squally.
„ 19 ...	6 a.m.	N. by W.	4·0	Cirri	E. by N.	7·0	Very red sunrise. Squally.
„ 19 ...	7 a.m.	N. by E.	5·0	Strat.	E. by N.	7·0	Cir. Cum. S.E.
„ 19 ...	8 a.m.	N.N.W.	5·0	Strat.	E.	4·0	
„ 19 ...	2 p.m.	S.E. by E.	1·0	Cum.	E.	2·0	Cirri. Veil.
„ 19 ...	5 p.m.	S.	1·0	Cu. Str. & Nimb.	S.E.	10·0	Cir. Cum.

UPPER CURRENTS OF AIR—*continued.*

DATE.	Hour.	Wind.		Clouds, 1st Stratum.		Amount of Cloud.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
Sept. 20 ...	Midnight	E.N.E.	2·0	Nimb.	E. by N.	10·0	Cir.St. A few drops of rain.
„ 20 ...	1 a.m.	N.E. by N.	1·0	Nimb.	E. by S.	10·0	
„ 20 ...	6 a.m.	S.W.	3·0	Cir. Cu., Cu. Str.	S.E.	7·0	Cir. Str., Cir.
„ 20 ...	4 p.m.	W. ½ S.	1·0	Cu. Str., Nimb.	E. by S.	9·5	Cir. Str. A few drops of rain. Clouds moving very fast.
„ 20 ...	5 p.m.	N.N.W.	1·0	Cu. Str., Nimb.	E.S.E.	9·5	Cir. Str.
„ 20 ...	7 p.m.	N.W.	2·0	Cir. Cu.	E.S.E.	7·0	Clouds moving rapidly. Lunar Halo.
„ 20 ...	8 p.m.	N.W.	4·0	Nimb.	E.S.E.	10·0	Cirri.
„ 21 ...	2 a.m.	N.W.	6·0	Nimb.	E.N.E.	10·0	Cir. Cum.
„ 21 ...	10 a.m.	S.W.	2·0	Nimb.	E. by N.	9·0	Cir. Cum.
„ 21 ...	11 a.m.	S.	2·0	Nimb.	N.E. by E.	7·0	Cir. Cum. Gentle rain.
„ 21 ...	5 p.m.	S.	1·0	Cir. Cu. & Cum.	E. by S	2·0	
„ 21 ...	6 p.m.	S.	1·0	Cir. Cu. & Cum.	E.	1·0	
„ 22 ...	11 a.m.	N.N.E.	7·0	Nimb.	S.S.E.	10·0	Clouds of dust.
„ 22 ...	Noon	N. by E.	3·0	Cu. Str. & Nimb.	S.S.E.	9·5	
„ 22 ...	1 p.m.	N.N.W.	4·0	Nimb.	S.E. by E.	8·0	Cir. Cum.
„ 23 ...	4 a.m.	N.W.	2·0	Nimb.	S.E.	6·0	Cir. Str. E.
„ 23 ...	6 a.m.	N.W.	2·0	Nimb.	S.E.	5·0	Cir. E. Rain.
„ 23 ...	7 a.m.	N. by W.	1·0	Cir. Cum.	E.S.E.	6·0	
„ 23 ...	11 a.m.	N.W.	4·0	Cir. Cu. & Cir. Str.	E.	9·0	
„ 24 ...	Midnight	N.W.	2·0	Cir. Cu. & Cu. Str.	E.S.E.	9·0	Cir. Str.
„ 24 ...	1 a.m.	N.W.	3·0	Cir. Cu. & Cu.	E.S.E.	6·0	
„ 24 ...	4 a.m.	N.W.	3·0	Cir. Cu., Cu. Str.	E.	7·0	Lunar Halo.
„ 24 ...	7 a.m.	W.N.W.	3·0	Cu. Strat.	E. by S.	6·0	Cirrus.
„ 24 ...	8 a.m.	N.W. by W.	5·0	Cu. Str.	E.S.E.	7·0	Cirrus.
„ 24 ...	7 p.m.	W.	5·0	Cu. Str.	N.E.	7·0	Cir. Cu.
„ 24 ...	8 p.m.	N.W. by N.	4·0	Nimb.	N.E.	6·0	Cirri.
„ 24 ...	11 p.m.	N.W. by N.	5·0	Nimb.	N.E.	10·0	Rain.
„ 25 ...	2 p.m.	S.W.	1·0	Cir. Cum., Cu. Str.	E.	9·0	A few drops of rain.
„ 25 ...	3 p.m.	S. ½ E.	1·0	Cir. Cum., Cu. Str.	E.S.E.	9·0	
„ 25 ...	4 p.m.	S. by E.	1·0	Cir. Cum., Cu. Str.	E.S.E.	9·0	
„ 25 ...	5 p.m.	S.	1·0	Cu. Str. & Nimb.	E. by N.	9·0	Cir. Cum.
„ 25 ...	6 p.m.	S. by E.	2·0	Cu. Str. & Nimb.	N.E.	8·0	Cir. Cum.
„ 26 ...	Mid. & 1 a.m.	W.	1·0	Cu. Str.	N.E.	9·0 & 2·0	Cir. Cum.
„ 26 ...	2 a.m.	W.	2·0	Cu. Str.	N.E.	6·0	Cir. Cum. Light squalls.
„ 26 ...	10 a.m.	W.S.W.	3·0	Cir. Cu., Cu. Str.	E.	9·0	Rain.
„ 27 ...	1 a.m.	N.W.	2·0	Nimb.	E.	10·0	
„ 27 ...	2 a.m.	N.W. ½ W.	3·0	Nimb.	E.	10·0	Cir. Cum.
„ 27 ...	3 a.m.	N.W.	3·0	Nimb.	E.	10·0	
„ 27 ...	9 a.m.	N.W. by W.	4·0	Strat.	N.N.E.	9·0	Cir. Cum.
„ 27 ...	10 a.m.	W.N.W.	3·0	Cu. Str.	E. by S.	7·0	Cir. Cum.
„ 28 ...	6 a.m.	N. ½ E.	3·0	Cu. Str.	...	3·0	Cir.Cum. & Cum. E. by S.
„ 29 ...	3 p.m.	S.S.W.	5·0	Cir. Cu. & Cu. Str.	N.E.	3·0	
„ 30 ...	11 a.m.	S. by E.	1·0	Cu. Str.	N.E. by E.	9·0	Cir. Cu.
„ 30 ...	1 p.m.	S.	1·0	Cir. Cu., Cu. Str.	N.E.	9·5	
„ 30 ...	6 p.m.	S.E. by S.	1·0	Nimb.	E.S.E.	10·0	
October 1 ...	5 a.m.	N.W.	1·0	Cu. Str.	N.E.	2·0	Cir. Cum. Dew.
„ 1 ...	6 a.m.	W.	2·0	Cu. Str.	N.E.	7·0	Cir. Cum.
„ 2 ...	10 a.m.	S. by E.	1·0	Cir. Cum.	W.N.W.	2·0	
„ 3 ...	1 p.m.	N.E. by N.	1·0	Cumulus	E.S.E.	2·0	Cir. Cum.
„ 3 ...	2 p.m.	S. by W.	1·0	Cir. Cum. & Cum.	S. by E.	1·0	
„ 6 ...	Midnight	N.W. by W.	1·0	Cir. Cum.	S.W.	5·0	Dew.
„ 6 ...	5 a.m.	N.E.	0·5	Cir. Cu., Cu. Str.	N.E.	9·5	
„ 6 ...	6 a.m.	S.W.	1·0	Cir. Cu., Cu. Str.	N.N.E.	9·5	
„ 7 ...	4 & 5 p.m.	N.	1·0	Cir. Cum.	...	7·0	Cir. Str. Veil. E. Halo.
„ 9 ...	5 a.m.	W.S.W.	3·0	Nimb.	S.E.	9·0	
„ 9 ...	6 a.m.	N.W. ½ W.	3·0	Cir. Cum.	E.S.E.	9·0	

UPPER CURRENTS OF AIR—*continued.*

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
OCTOBER 10 ...	6 a.m.	S.E. by E.	1·0	Cir. Cum., Cu. Str.	N.N.E.	6·0	
„ 10 ...	10 a.m.	S. by W.	1·0	Cu. Str.	...	9·0	Cir. Cum. W.
„ 10 ...	3 p.m.	S.S.W.	3·0	Cu. Str.	...	7·0	Cir. Cum. S.S.W.
„ 10 ...	4 p.m.	S.S.W.	3·0	Cu. Str.	S.S.W.	6·0	Cir. Cum. S.S.W.
„ 11 ...	3 p.m.	S. by W.	3·0	Cir. Cum.	N.E.	9·0	
„ 11 ...	4 p.m.	S.	1·0	Cir. Cum.	S.E. by S.	5·0	
„ 12 ...	7 a.m.	S.W.	2·0	Cu. Str.	E.S.E.	9·0	Cir. Cum.
„ 12 ...	9 a.m.	S.W. ½ S.	2·0	Cir. Cum.	E.	5·0	Cu., Cu. Str. S.S.E.
„ 12 ...	10 a.m.	S.W. by S.	2·0	Cir. Cu., Cu. Str.	E.	4·0	
„ 12 ...	7 p.m.	S.E.	0·5	Cirri	S.	0·5	
„ 13 ...	10 a.m.	N.N.W.	1·0	Cir. & Cir. Cu.	E.S.E.	1·0	
„ 13 ...	2 p.m.	S. by E.	1·0	Cir. & Cir. Cu.	E.N.E.	2·0	
„ 14 ...	5 a.m.	W.N.W.	1·0	Cir. Cum.	N.E.	10·0	
„ 14 ...	6 a.m.	N.W. by W.	1·0	Cir. Cum.	N.E.	10·0	
„ 14 ...	11 a.m.	W.N.W.	1·0	Cir. Cum.	S.E.	1·0	
„ 15 ...	4 p.m.	N.E. by N.	5·0	Cu. Str.	S.	9·5	Cir. Str.
„ 16 ...	1 p.m.	S. ½ W.	3·0	Cir. Cu.	S.S.E.	10·0	Cir. Str.
„ 16 ...	4 p.m.	S.W. by W.	1·0	Nimb.	S.E.	10·0	Misty rain.
„ 16 ...	5 p.m.	W.	1·0	Nimb.	S.E.	10·0	Misty rain.
„ 17 ...	4 & 5 a.m.	N.W.	3·0	Cu. Str.	E.N.E.	6·0	
„ 17 ...	6 a.m.	N.W. by N.	4·0	Cu. Str.	E. by N.	8·0	Cir. Cum.
„ 17 ...	7 a.m.	N.W. by W.	3·0	Cu. Str.	E. by N.	8·0	Cum.
„ 17 ...	9 a.m.	W.S.W.	5·0	Nimb.	E.	8·0	Cirri.
„ 17 ...	1 p.m.	W.S.W.	5·0	Cir. Cum., Cu. Str.	E. by S.	7·0	
„ 17 ...	2 p.m.	W. by S.	4·0	Cu. Str. & Nimb.	E. by S.	7·0	Cir. Cum.
„ 17 ...	3 p.m.	S.W.	4·0	Cumulus	E. by S.	3·0	Cir. Cum.
„ 17 ...	4 p.m.	W. by S.	3·0	Cu. Str. & Nimb.	E.S.E.	9·0	Cir. Cum.
„ 18 ...	3 p.m.	N. by W.	6·0	Cir. Str.	E.S.E.	5·0	
„ 18 ...	4 p.m.	N. ½ W.	7·0	Cir. & Cir. Str.	E.S.E.	8·0	
„ 18 ...	5 p.m.	N.	6·0	Cir. & Cir. Str.	S.E. by E.	9·5	
„ 18 ...	8 p.m.	N.N.E.	5·0	Cir. Str.	S.S.E.	6·0	
„ 18 ...	11 p.m.	N.	5·0	Cu. Str.	S.S.E.	7 0	
„ 19 ...	8 a.m.	N.W. by N.	3·0	Nimb.	E.	10·0	Cir. Cum. Little rain.
„ 19 ...	Noon	N. by E.	3·0	Nimb.	E.	9·0	Cir. Cum. Wind unsteady, between N. & N.E.
„ 19 ...	4 p.m.	W.S.W.	4·0	Nimb.	E. by S.	8·0	Cir. Cum. Rainbow in E.
„ 20 ...	9 p.m.	W.	2·0	Cir. Cum.	N.E.	2·0	
„ 21 ...	9 a.m.	S.W.	3·0	Cir. Cum.	E. by N.	4·0	
„ 21 ...	10 a.m.	S.W.	2·0	Cir. Cum.	E. by N.	5·0	
„ 21 ...	1 p.m.	S. by W.	3·0	Cu., Cir. Cu.	E.N.E.	2·0	
„ 21 ...	8 p.m.	S. by W.	3·0	Cu. Str.	N.E.	10·0	Cir Cum.
„ 22 ...	9 a.m.	S.W. by W.	1·0	Cu. Str. & Nimb.	N.W.	6·0	Cir. Cum.
„ 22 ...	2 p.m.	S.S.W.	3·0	Cir. Cu., Cu. Str.	E.NE.	2·0	Cir. Str.
„ 22 ...	5 p.m.	S. by W.	2·0	Cir. Cum.	...	2·0	Cir. Str. E. by N. Wind-trees.
„ 23 ...	9 a.m.	N.E. by E.	0·5	Cu. Str.	E.S.E.	2·0	Cir. Cum.
„ 25 ...	9 a.m.	N. by W.	6·0	Cir. Str.	E.S.E.	7·0	
„ 25 ...	10 a.m.	N. by W.	6·0	Cirri	E.S.E.	7·0	Cir. Str.
„ 25 ...	11 a.m.	N.	5·0	Cir. Str.	S.E. by E.	8·0	
„ 25 ...	Noon	N. by W.	6·0	Cir. Cum.	S.	7·0	Cir. Str. S.E. by S.
„ 25 ...	5 p.m.	S.E.	3·0	Nimb.	S.E. by E.	9·0	Cir. Cu., Cu. Str.
„ 26 ...	3 a.m.	S.W. by W.	1·0	Cu. Str.	S.E. by E.	9·5	Cir. Cum.
„ 26 ...	4 a.m.	S.S.W.	2·0	Cu. Str.	...	7·0	Cir. Cum. S.S.E.
„ 26 ...	5 a.m.	S.W.	1·0	Cu. Str. & Nimb.	N.N.W.	9·0	Cir. Cum. E.S.E.
„ 26 ...	10 a.m.	S.	1·0	Cu. Str.	E.S.E.	7·0	Cir. Cu., Cir. Str.
„ 26 ...	11 a.m.	S.W.	2·0	Cu. Str.	S.E.	4·0	Cir. Cu., Cir. Str.
„ 26 ...	3 p.m.	S. ½ W.	3·0	Cir. Str.	E.S.E.	5·0	
„ 26 ...	4 & 5 p.m.	S. by W.	3·0	Cir. Str.	S.E.	6·0	Solar Halo.

UPPER CURRENTS OF AIR—*continued.*

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
OCTOBER 26 ...	6 p.m.	S.S.W.	2·0	Cir. Str.	S.E. by S.	7·0	
„ 27 ...	6 a.m.	N.N.W.	1·0	Nimb.	S.E.	9·0	Cir. Cum.
„ 29 ...	1 p.m.	S.	3·0	Cir. Str., Cir. Cu.	N.E.	9·0	Solar Halo.
„ 29 ...	4 p.m.	S.	3·0	Cu. Str.	...	7·0	Cir. Cum. N.E.
„ 30 ...	3 p.m.	S.S.W.	4·0	Cir. Cu., Cu. Str.	N.E.	9·5	
„ 31 ...	Noon	S.	1·0	Cir. Cum.	S.W.	3·0	
NOVEMBER 1 ...	9 a.m.	N.	2·0	Cir. Cu.	S.E. by S.	9·0	Cir. Str.
„ 1 ...	Noon	N.N.E.	2·0	Cir. Cu., Cu. Str.	S.E.	9·0	
„ 1 ...	5 p.m.	N. ½ W.	2·0	Cir. Cu., Cu. Str.	S.E.	10·0	
„ 2 ...	4 p.m.	S.	5·0	Cir. Cu.	N.E.	2·0	
„ 2 ...	7 p.m.	S.S.W.	5·0	Cir. Cu.	N.	5·0	
„ 3 ...	5 a.m.	E.	2·0	Cu. Str., Nimb.	N.W.	10·0	
„ 3 ...	6 a.m.	E.	2·0	Cu. Str.	N.W. by W.	10·0	
„ 5 ...	10 a.m.	S.	2·0	Cir. Str., Veil	E.	9·0	
„ 5 ...	5 p.m.	S.	4·0	Cir. Str.	E.N.E.	9·0	Solar Halo.
„ 6 ...	8 a.m.	S.S.W.	2·0	Cu. Str.	E.N.E.	10·0	Cir. Cu.
„ 6 ...	10 a.m.	S.	2·0	Cu. Str.	W.N.W.	7·0	Cir. Cu. E.
„ 6 ...	4 p.m.	E. by S.	3·0	Cir. Str., Cir. Cu.	E. by S.	7·0	
„ 6 ...	5 p.m.	E. by S.	3·0	Nimb.	E.S.E.	8·0	Cir. Str., Cu. Str.
„ 6 ...	6 p.m.	E. by N.	2·0	Cu. Str., Nimb.	E.S.E.	7·0	Cirri. Rain.
„ 6 ...	7 p.m.	W. by S.	4·0	Nimb.	E.	10·0	Thunder and lightning.
„ 7 ...	5 a.m.	W. ½ S.	5·0	Nimb.	E.N.E.	10·0	
„ 7 ...	11 a.m.	S.S.W.	6·0	Cu. Str.	E. by N.	5·0	
„ 7 ...	Noon	S.S.W.	6·0	Nimb.	E. by N.	7·0	Cir. Cum. Rain.
„ 8 ...	9 a.m.	S. by W.	3·0	Cum. & Nimb.	N.N.W.	9·0	
„ 8 ...	10 a.m.	S. by W.	3·0	Nimb.	N.W.	6·0	Cir. Cum.
„ 9 ...	1 a.m.	S.E.	2·0	Cum., Nimb.	N.	7·0	
„ 9 ...	6 a.m.	E. by S.	1·0	Cum. Str.	N.	10·0	Cum. Nimb.
„ 10 ...	2 p.m.	S.	1·0	Cum.	N.	6·0	Cir. Str.
„ 10 ...	4 p.m.	S. by E.	2·0	Cum.	...	3·0	Cir. Str. E. by N.
„ 10 ...	6 p.m.	S.E.	2·0	Cir. Cum.	N.	2·0	Cir.
„ 11 ...	4 a.m.	N.E.	1·0	Cir. Str.	E.S.E.	3·0	Cir. Cum. Dew.
„ 12 ...	8 p.m.	S.W.	1·0	Str.	E.S.E.	8·0	Cir. Cum. Lightning.
„ 13 ...	8 p.m.	E.S.E.	5·0	Nimb.	S.W.	9·0	Cir. Cum.
„ 14 ...	1 p.m.	S.W.	1·0	Cir. Cum.	S.E. by E.	3·0	
„ 15 ...	7 p.m.	S.W.	3·0	Nimb.	N.N.E.	10·0	
„ 15 ...	11 p.m.	W. by S.	3·0	Nimb.	N.N.E.	10·0	Cir. Cum.
„ 16 ...	8 p.m.	S.W.	0·5	Cir. Str.	S.E.	7·0	
„ 16 ...	9 p.m.	W. by N.	1·0	Cir. Str.	S.E.	10·0	Dew.
„ 16 ...	10 p.m.	N.N.E.	1·0	Nimb.	S.E.	10·0	Cir. Str.
„ 16 ...	11 p.m.	E.N.E.	4·0	Cumuli	E.	10·0	Cir. Str. Lightning in S.W.
„ 17 ...	9 a.m.	S.W. by S.	4·0	Cir. Cum.	S.S.E.	8·0	Cir. Str.
„ 17 ...	10 a.m.	S. by W.	4·0	Cir. Cum.	S. by E.	7·0	Cir. Str.
„ 17 ...	1 p.m.	S.S.W.	5·0	Cir. Cum.	N.E.	9·0	
„ 17 ...	4 p.m.	S.	4·0	Cir. Cum. & Cum.	N.E.	5·0	
„ 17 ...	6 p.m.	S. by W.	3·0	Nimb.	E.N.E.	7·0	Cu. Str. E.N.E.
„ 17 ...	9 p.m.	S.W. by S.	4·0	Nimb.	E. by N.	10·0	Cir. Cum.
„ 17 ...	10 p.m.	S.W.	4·0	Nimb.	N.N.E.	8·0	Cir. Cum.
„ 18 ...	11 a.m.	S. by E.	1·0	Cir. Cum.	S.E.	3·0	
„ 18 ...	Noon	S.S.W.	1·0	Cir. Cum.	E.	5·0	
„ 18 ...	2 p.m.	S. by E.	2·0	Cir. Cum.	E. by N.	3·0	
„ 18 ...	7 p.m.	S. by W.	2·0	Nimb.	N.E.	10·0	Cir. Cum.
„ 18 ...	10 p.m.	N.W. by W.	1·0	Cu. Str. & Nimb.	E.	9·5	
„ 19 ...	Midnight	W.S.W.	1·0	Cir. Cum. & Nimb.	S.S.E.	2·0	
„ 19 ...	3 a.m.	N.E.	0·5	Cu. Str.	E.	6·0	Dew.
„ 19 ...	4 a.m.	N.E. by N.	0·5	Cu. Str.	E. by S.	4·0	Cir. Cum. Fog and dew.

UPPER CURRENTS OF AIR—*continued.*

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
NOVEMBER 19 ...	6 a.m.	N.W. by W.	1·0	Cum.	E.	2·0	Cir. Cum.
„ 20 ...	Noon	N.W.	2·0	Cir. & Cir. Str.	E.	3·0	Solar Halo.
„ 21 ...	2 p.m.	N.N.W.	4·0	Cir. Cum.	E.	3·0	Cir. & Cir. Str.
„ 21 ...	3 p.m.	N. by W.	4·0	Cir. & Cir. Cum.	E. by S.	2·0	Veil.
„ 21 ...	4 p.m.	N.	5·0	Cir. & Cir. Cum.	E.S.E.	2·0	Veil.
„ 21 ...	5 p.m.	N.	5·0	Cir. & Cir. Cum.	E.S.E.	3·0	Veil.
„ 21 ...	11 p.m.	N.N.E.	2·0	Cir. Str.	E. by N.	3·0	Lunar Halo.
„ 23 ...	Noon	N.N.W.	7·0	Cum. & Cir. Cum.	S.E.	3·0	
„ 23 ...	1 p.m.	S. by W.	6·0	Cir. Cum.	S.E.	3·0	
„ 23 ...	2 p.m.	S.	5·0	...	S.E. by E.	5·0	
„ 23 ...	4 p.m.	S.	3·0	Cu. Str.	E.S.E.	2·0	Cir. Cu.
„ 23 ...	7 p.m.	E.	1·0	Cu. Str.	S.E.	8·0	
„ 24 ...	4 a.m.	W.S.W.	2·0	Nimb.	E.N.E.	10·0	Nimb. S.E.
„ 24 ...	5 a.m.	W. by S.	2·0	Nimb.	S.E.	10·0	Cir. Str. & Cir. Cum.
„ 26 ...	6 p.m.	S.	2·0	Cir. Str.	S.E. by E.	7·0	
„ 27 ...	1 p.m.	S.S.W.	3·0	Cir. Str.	N.	8·0	
„ 29 ...	3 p.m.	N. by E.	1·0	Cum. & Nimb.	E.	10·0	
„ 29 ...	6 p.m.	N.E.	2·0	Cum. & Nimb.	S.E.	9·0	Rain.
„ 30 ...	6 a.m.	N. by W.	1·0	Cir. Cu., Cu. Str.	S.E.	3·0	
„ 30 ...	Noon	N.	2·0	Cu., Cu. Str.	S.E.	8·0	
„ 30 ...	5 p.m.	S.S.W.	2·0	Nimb.	N.E.	10·0	
„ 30 ...	10 p.m.	W. by S.	3·0	Nimb.	N.E.	10·0	Rain.
DECEMBER 1 ...	7 a.m.	W.S.W.	4·0	Cu. Str.	E.S.E.	7·0	Cir. Cum.
„ 1 ...	9 a.m.	N.W. ½ W.	3·0	Cum.	E. by S.	6·0	Cir. Cum.
„ 1 ...	10 a.m.	S.W.	1·0	Cum.	E. by S.	7·0	Cir. Cum.
„ 1 ...	3 p.m.	S.S.E.	1·0	Cir. Cum.	S.E.	6·0	
„ 1 ...	4 p.m.	N.E.	1·0	Cir. Cum.	S.E.	5·0	
„ 2 ...	3 p.m.	N.	4·0	Cum.	E.S.E.	8·0	Cir. Cum.
„ 2 ...	4 p.m.	N. by W.	3·0	Cum.	E.S.E.	7·0	Cir. Cum.
„ 2 ...	5 p.m.	S.S.W.	6·0	Cum. & Nimb.	E.S.E.	8·0	
„ 2 ...	7 p.m.	S.E. by S.	4·0	Cu. Str.	S.S.E.	7·0	Cir. Cum.
„ 3 ...	9 a.m.	N. by W.	6·0	Cu. Str.	S.E.	3·0	Cir. Cum.
„ 3 ...	10 a.m.	N. by W.	6·0	Cir., Cir. Cum.	S.E.	6·0	
„ 3 ...	11 a.m.	N.N.W.	5·0	Cir. Cu.	S.E.	7·0	
„ 3 ...	Noon & 1 p.m.	N.N.W.	6·0	Cir. Cu., Cu. Str.	S.E.	8·0	Small whirlwinds.
„ 3 ...	2 p.m.	N.W.	5·0	Cu. Str.	S.E.	9·0	Wind veered to south just after 2 o'clock.
„ 3 ...	7 p.m.	S.E.	1·0	Cir. Cum. & Nimb.	S.E. by E.	3·0	
„ 3 ...	9 p.m.	S.E. by E.	1·0	Nimb.	S.E.	7·0	Thunderstorm and rain.
„ 3 ...	10 p.m.	S.E.	1·0	Nimb.	S.E. by S.	6·0	Thunderstorm and rain.
„ 3 ...	11 p.m.	S.S.E.	1·0	Nimb.	S.E. by S.	7·0	Thunderstorm and rain.
„ 4 ...	Midnight	E.	2·0	Cum. & Nimb.	S.	6·0	Thunderstorm and rain.
„ 4 ...	6 a.m.	N.N.W.	2·0	Cir. Cum. & Cum.	S.E.	6·0	Dew.
„ 4 ...	7 a.m.	W.N.W.	2·0	Cir. Cum.	S.E.	7·0	
„ 4 ...	9 a.m.	W.	3·0	Cir. Cum.	S.E.	3·0	
„ 4 ...	11 a.m.	S.E. by E.	1·0	Cir. Cum.	E.S.E.	1·0	
„ 4 ...	1 p.m.	S.W. by S.	1·0	Cir. Cum.	E. by S.	1·0	
„ 4 ...	3 p.m.	S. by E.	2·0	Cumulus	S.S.E.	6·0	
„ 4 ...	4 p.m.	S.	6·0	Cumulus	S.S.E.	5·0	
„ 4 ...	5 p.m.	S.	5·0	Cir. Cu., Cir. Str.	S.S.E.	3·0	
„ 5 ...	10 a.m.	W.S.W.	2·0	Cir. Cu., Cu. Str.	S.E.	6·0	
„ 5 ...	Noon	W.	2·0	Cir. Cu., Cu. Str.	S.E.	7·0	
„ 5 ...	1 p.m.	S.S.W.	5·0	Cir. Cu., Cu. Str.	S.E.	8·0	
„ 5 ...	2 p.m.	S.S.W.	4·0	Cir. Cu., Cu. Str.	S.E.	8·0	
„ 5 ...	3 p.m.	S.	3·0	Cir. Cum.	E. by S.	6·0	
„ 5 ...	6 p.m.	S. by E.	5·0	Cir. Cum.	E. by S.	0·5	
„ 6 ...	9 a.m.	S.	2·0	Cir. Cum.	E.N.E.	2·0	

UPPER CURRENTS OF AIR—*continued.*

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
DECEMBER 6 ...	4 p.m.	S.	2·0	Cir. Cum.	N.	8·0	Cir. Cum. Cir. Str. Veil. S.E. by E.
„ 7 ...	9 a.m.	S. by W.	4·0	Cu. Str. & Nimb.	N.N.E.	9·5	
„ 7 ...	8 p.m.	S.W.	5·0	Nimb.	N.	7·0	Cir. Cum.
„ 8 ...	1 a.m.	N.	1·0	Nimb.	N. by E.	10·0	Rain.
„ 8 ...	3 a.m.	W.	2·0	Nimb.	N.	10·0	Rain.
„ 8 ...	4 a.m.	W.	1·0	Nimb.	N.	10·0	Rain.
„ 8 ...	6 a.m.	W.S.W.	1·0	Nimb.	N.	10·0	Rain.
„ 8 ...	9 a.m.	N.W.	1·0	Nimb.	N.	7·0	Cum. Rain.
„ 8 ...	11 a.m.	S.	3·0	Nimb.	N.N.E.	7·0	Cir. Cum.
„ 10 ...	9 a.m.	N.E.	1·0	Cir. Cum., Cir. Str.	S.E.	6·0	
„ 10 ...	3 p.m.	W.S.W.	1·0	Cir. Cu., Cu. Str.	S.E.	...	
„ 11 ...	8 a.m.	S.E.	1·0	Nimb.	N.	10·0	Cir. Cum.
„ 12 ...	8 a.m.	N.E.	3·0	Nimb.	W.	10·0	Rain.
„ 12 ...	1 p.m.	N.N.E.	2·0	Nimb.	S.W.	10·0	Rain.
„ 12 ...	9 p.m.	S. by E.	3·0	Nimb.	N.E.	10·0	
„ 13 ...	4 a.m.	S. by E.	3·0	Cu. Str.	N.N.W.	5·0	
„ 13 ...	10 a.m.	S.S.E.	2·0	Cu. & Cir. Cum.	W. by N.	7·0	
„ 13 ...	11 a.m.	S.W. by S.	1·0	Cu. & Cir. Cum.	N.W. by N.	5·0	
„ 13 ...	Noon	S.W.	4·0	Cu. & Cir. Cum.	N.W.	3·0	
„ 14 ...	8 a.m.	N.E.	2·0	Cu. Str.	E. by S.	5·0	
„ 15 ...	4 a.m.	N.E.	2·0	Cir. Cu., Nimb.	E.	6·0	
„ 15 ...	5 a.m.	N.E.	1·0	Cir. Cu., Nimb.	E.	7·0	Rainbow.
„ 15 ...	6 a.m.	N.E.	4·0	Cu. Str., Nimb.	S.E.	8·0	Cir. Cu.
„ 15 ...	3 p.m.	S. ½ W.	7·0	Cu. Str.	S.S.E.	9·0	
„ 15 ...	4 p.m.	S.	5·0	Cir. Str.	S.E. by E.	9·5	
„ 15 ...	5 p.m.	S. ½ E.	4·0	Cir. Str.	N.N.E.	9·5	
„ 15 ...	6 p.m.	S. ½ E.	3·0	Cu. Str.	...	7·0	Cir. Str. Veil. E.S.E.
„ 16 ...	5 a.m.	N.E.	1·0	Cu. Str.	W.S.W.	9·0	Cir. Cum.
„ 17 ...	7 p.m.	S. by E.	4·0	Cum.	E.N.E.	2·0	Cir. Str.
„ 17 ...	10 p.m.	S.E. by E.	2·0	Cir. Str.	S.E.	4·0	Halo.
„ 18 ...	6 a.m.	N.E.	1·0	Cu. Str.	E.	9·0	Cir. Cum.
„ 18 ...	9 a.m.	N.W. by N.	3·0	Nimb.	E. by N.	10·0	Cir. Cum.
„ 18 ...	11 a.m.	S.	2·0	Cu. Str. & Nimb.	E.S.E.	10·0	
„ 18 ...	Noon.	N. by W.	3·0	Cu. Str. & Nimb.	S.E.	10·0	
„ 18 ...	3 p.m.	N.N.W.	3·0	Cu. Str. & Nimb.	N.	10·0	Cu. Str. & Nimb. S.E.
„ 19 ...	2 p.m.	E. ½ N.	2·0	Nimb.	S.W.	10·0	Rain.
„ 19 ...	5 p.m.	W.S.W.	3·0	Nimb.	N.E.	10·0	Rain.
„ 19 ...	8 p.m.	W.S.W.	7·0	Nimb.	N.E.	10·0	Rain.
„ 19 ...	9 p.m.	W.S.W.	7·0	Nimb.	N.E.	10·0	Rain.
„ 19 ...	10 p.m.	W. by S.	7·0	Nimb.	N.	10·0	Rain.
„ 19 ...	11 p.m.	W. by S.	7·0	Nimb.	N.	10·0	Rain.
„ 20 ...	Midnight	W. by S.	6·0	Nimb.	N.	10·0	Rain.
„ 20 ...	1 a.m.	W. by S.	7·0	Nimb.	N.E.	10·0	Rain.
„ 20 ...	6 p.m.	W. ½ S.	5·0	Nimb.	N.E.	8·0	Cu. O. Rain.
„ 21 ...	7 a.m.	N.W. by N.	2·0	Nimb.	E. by S.	10·0	Cir. Cu. Rain.
„ 21 ...	11 a.m. to 1 p.m.	N.N.W.	2·0	Str. & Nimb.	S.E.	10·0	Rain.
„ 21 ...	7 p.m.	W.	1·0	Nimb.	N.E.	10·0	Rain.
„ 21 ...	8 p.m.	S.W. by S.	0·5	Nimb.	N.	10·0	Cu. O. N.E. Rain.
„ 21 ...	9 p.m.	...	0·0	Nimb.	N.	9·0	Cu. O. N.E. Rain.
„ 22 ...	7 a.m.	N.W. ½ W.	2·0	Cu. O.	E.	9·0	Cir. Cu.
„ 22 ...	8 a.m.	W.S.W.	3·0	Cu. O.	E.	8·0	Cir. Cu.
„ 22 ...	9 a.m.	W.S.W.	2·0	Cu. Str.	E.N.E.	9·5	Cir. Cu.
„ 23 ...	5 a.m.	E.N.E.	1·0	Str.	S.S.E.	4·0	Fog.
„ 23 ...	6 a.m.	N.E.	1·0	Cir. Str.	S.W.	2·0	
„ 24 ...	5 a.m.	S.S.E.	0·5	Nimb.	E.	2·0	Strat.
„ 24 ...	6 a.m.	S.E. by S.	1·0	Cir. Str.	E.	10·0	Cir. Cu.

UPPER CURRENTS OF AIR—*continued.*

DATE.	Hour.	Wind.		Clouds, 1st Stratum.		Amount of Cloud.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1858.							
December 25 ...	7 a.m.	N.E. by N.	0·5	Nimb.	S.	10·0	Cir. Cum.
„ 25 ...	11 a.m.	S. ½ E.	1·0	Nimb.	N.N.W.	10·0	Cir. Cum. S. Rain.
„ 25 ...	3 p.m.	S. ½ E.	2·0	Str. & Cu. O.	S.	6·0	Cir. Str., Cir. Cu. Halo.
„ 26 ...	6 a.m.	N.W.	1·0	Cir. Str.	E.	4·0	
„ 26 ...	7 a.m.	N.E.	2·0	Cir. Cu.	E.	1·0	
„ 26 ...	11 a.m.	N. ½ E.	4·0	Cir. Cu., Cum.	S.	3·0	Cir. Str. E.S.E.
„ 26 ...	Noon	N.	2·0	Cir. Cu., Cum.	S.	3·0	Cir. Str. E.S.E.
„ 27 ...	4 p.m.	W.S.W.	5·0	Cu. Str. & Nimb.	E.S.E.	8·0	
„ 27 ...	5 p.m.	W.S.W.	4·0	Cir. Cu., Cu. Str.	E.S.E.	7·0	
„ 28 ...	9 a.m.	N.W. by W.	2·0	Cum.	N.E.	4·0	
„ 28 ...	10 a.m.	S.W.	1·0	Cir. Cu. & Cum.	S.E.	8·0	
„ 28 ...	11 a.m.	S.S.W.	1·0	Cir. Cu., Cu. Str.	...	7·0	Cir. Cu., Cu. Str. E.N.E.
„ 28 ...	Noon	S.	1·0	Cir. Cu., Cu. Str.	E.N.E.	9·0	
„ 28 ...	3 p.m.	S.S.W.	3·0	Cir. Cu. & Cum.	S.E.	2·0	
1859.							
January 2 ...	8 a.m.	S.W.	3·0	Cu. Str.	N.N.E.	10·0	Cir. Cum.
„ 2 ...	7 p.m.	S.E. by S.	3·0	Nimb.	N.E.	10·0	Cu. Str.
„ 3 ...	8 a.m.	S.W.	3·0	Cu. Str.	N.	8·0	Cum.
„ 3 ...	4 p.m.	S.W. by W.	4·0	Cu. Str.	N.W.	4·0	Cir. Cum.
„ 4 ...	10 a.m.	S.	3·0	Cu. Str.	W.N.W.	9·5	Cir. Cum.
„ 4 ...	11 a.m.	S.	5·0	Cu. Str.	W.N.W.	7·0	Cir. Cum.
„ 4 ...	Noon	S.S.W.	5·0	Cu. Str.	W.N.W.	5·0	Cir. Cum.
„ 4 ...	1 p.m.	S.S.W.	5·0	Cir. Cum.	W.N.W.	3·0	
„ 4 ...	2 p.m.	S.S.W.	6·0	Cir. Cum.	W.N.W.	2·0	
„ 5 ...	6 a.m.	S.E. ½ E.	0·5	Cir. Cum.	W.S.W.	9·0	
„ 5 ...	7 a.m.	N.E.	0·5	Cir. Cum.	W.S.W.	3·0	
„ 5 ...	2 p.m.	S.W.	1·0	Cir. Cum.	S.W.	1·0	
„ 5 ...	4 p.m.	S.E. by S.	2·0	Cir. Cum.	S.	2·0	Cir. Str. Veil. S. Stationary Cirri.
„ 5 ...	5 p.m.	S.S.E.	3·0	Cir. Cum.	S.	1·0	
„ 6 ...	8 a.m.	W. ½ N.	0·5	Cum.	S. by W.	2·0	
„ 7 ...	2 a.m.	...	0·0	Strat.	S.E.	8·0	A breath of air sometimes perceptible from the N.E.
„ 7 ...	3 a.m.	...	0·0	Str. Cum.	S.E.	5·0	
„ 7 ...	6 a.m.	N.E.	0·5	Cu. Str. & Str.	S.E.	8·0	
„ 7 ...	10 a.m.	S. by E.	1·0	Cu. & Cir. Cu.	E. by S.	7·0	Cir. Str.
„ 7 ...	11 a.m.	S.	2·0	Cir. Cu.	E. by S.	6·0	Veil.
„ 7 ...	4 p.m.	S.W. by S.	5·0	Nimb.	N.E. by N.	7·0	Cir. Cu. & Cir. Str. E.
„ 7 ...	5 p.m.	S.S.W.	6·0	Nimb.	N.E. by N.	5·0	Cir. Cu. & Cir. Str. E.
„ 7 ...	6 p.m.	S.W.	5·0	Nimb.	N.E. by N.	5·0	Cir. Cu. & Cir. Str. Hazy.
„ 8 ...	5 p.m.	S.	1·0	Cu. Str. & Nimb.	E.	10·0	
„ 8 ...	9 p.m.	W.S.W.	1·0	Cu. Str.	E.	10·0	
„ 8 ...	10 p.m.	E.S.E.	2·0	Cu. Str. & Nimb.	N.W.	10·0	
„ 9 ...	1 p.m.	S ½ E.	1·0	Cu. Str.	S. by E.	10·0	Veil. Distant thunder.
„ 9 ...	4 p.m.	S.S.E.	2·0	Cu. Str. & Nimb.	N.W.	10·0	Cu. Str. & Nimb. S.S.E. Wind very variable. Clouds moving in all directions.
„ 10 ...	5 a.m.	W. ½ N.	3·0	Cu. O., Cu. Str.	S. by E.	3·0	
„ 10 ...	7 a.m.	N.W.	3·0	Cu. Str.	E.S.E.	1·0	Cir. Cum.
„ 12 ...	4 & 5 a.m.	S.W.	1·0	Nimb.	N.N.E.	10·0	
„ 12 ...	1 p.m.	S.	2·0	Cu. Str.	N.E.	7·0	Cir. Cum.
„ 13 ...	4 a.m.	E. by S.	2·0	Cu. Str.	N.N.E.	6·0	Dew.
„ 13 ...	5 a.m.	E. by S.	0·5	Cu. Str.	N.N.E.	9·0	Cir. Cum.
„ 13 ...	8 a.m.	S.E. by S.	2·0	Cum.	E.S.E.	6·0	
„ 13 ...	Noon	S.W.	3·0	Cir. Cum.	W.	3·0	
„ 15 ...	6 a.m.	N.E.	1·0	Cir. & Cir. Str.	S.	3·0	Veil forming.
„ 15 ...	7 a.m.	N.E.	2·0	Veil	S.	6·0	Cir. & Cir. Str.
„ 15 ...	8 a.m.	N.E. ½ N.	3·0	Veil	S.	8·0	Cir. & Cir. Str.

UPPER CURRENTS OF AIR—*continued.*

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1859.							
JANUARY 15 ...	9 a.m.	N.N.E.	3·0	Veil	S.	8·0	Cir. & Cir. Str.
„ 16 ...	7 a.m.	N.E.	0·5	Nimb.	S.	10·0	Rain.
„ 16 ...	8 a.m.	N.E.	2·0	Nimb.	S.	9·0	Cirri. Rain.
„ 16 ...	10 a.m.	N.	5·0	Nimb.	S.S.E.	9·5	Cirri. Rain.
„ 16 ...	4 p.m.	N.	3·0	Cu. Str.	S.E.	3·0	Cir. Cum.
„ 16 ...	7 p.m.	N. by E.	3·0	Cir. Cu., Cir. Str.	S. by E.	4·0	Veil. S. by E. Lightning in W. and S.W.
„ 16 ...	9 p.m.	N.	1·0	Cir. Cu., Cir. Str.	S.E.	7·0	Veil.
„ 16 ...	10 p.m.	S. ½ W.	2·0	Cu. Str.	S.E.	10·0	Cir. Cu. & Cir. Str.
„ 17 ...	Noon	S.	0·5	Cu. Str.	S.S.E.	4·0	
„ 17 ...	1 p.m.	E.N.E.	1·0	Cu. O.	S.	5·0	Cir. Cum.
„ 17 ...	2 p.m.	E. ½ N.	1·0	Cu. Str.	E. by S.	6·0	Cir. Cum.
„ 17 ...	4 p.m.	W.	0·5	Cum.	S.	6·0	Cir. Cum.
„ 17 ...	5 p.m.	S.W.	1·0	Cum.	E.	5·0	Cir. Cum.
„ 17 ...	6 p.m.	S.W.	3·0	Cum.	E.	5·0	Cir. Cum.
„ 17 ...	7 p.m.	S.	2·0	Cum.	S.E.	3·0	Cir. Cum.
„ 17 ...	8 p.m.	S. by E.	1·0	Cum.	S.E. by E.	5·0	Cir. Cum.
„ 17 ...	9 p.m.	S. by E.	0·5	Cir. Cu., Cu. O.	N. by W.	7·0	Cir.Cu., Cu.O. S.E. by S.
„ 17 ...	10 p.m.	W. by S.	1·0	Cir. Cu., Cu. O.	S.E. by E.	6·0	
„ 17 ...	11 p.m.	W.N.W.	1·0	Cir. Cu., Cu. O.	S. by W.	2·0	
„ 18 ...	7 a.m.	N.W.	3·0	Cir. Cum.	E.S.E.	3·0	
„ 18 ...	8 a.m.	N.W.	4·0	Cu. Str.	E.S.E.	3·0	Cir. Cum.
„ 18 ...	9 a.m.	W.N.W.	3·0	Cir. Cum.	S.E.	3·0	
„ 18 ...	10 a.m.	W. by N.	4·0	Cir. Cum.	S.E. by S.	3·0	Cir. Cum.
„ 18 ...	11 a.m.	W. by N.	4·0	Cir., Cir. Cum.	S.E.	5·0	
„ 19 ...	9 a.m.	W.S.W.	4·0	Cu. Str.	N.E.	9·5	Cir. Cum.
„ 20 ...	2 p.m.	S. by W.	4·0	Cu. Str.	N.W.	9·0	Cir. Cum.
„ 20 ...	3 p.m.	S.	3·0	Cu. Str.	N.W.	4·0	Cir. Cum.
„ 20 ...	4 p.m.	S.	3·0	Cu. Str.	N.W.	6·0	Cir. Cum.
„ 20 ...	5 p.m.	S. by E.	3·0	Cu. Str.	N.W.	6·0	Cir. Cum.
„ 20 ...	6 p.m.	S.	4·0	Cum.	W.S.W.	3·0	
„ 20 ...	7 p.m.	S.	3·0	Cu. Str.	N.N.W.	2·0	Cir. Cum. Scud.
„ 20 ...	10 p.m.	S. by E.	3·0	Cu. Str.	N.W.	3·0	
„ 20 ...	11 p.m.	S. by E.	1·0	Cir. Cum. & Str.	N.W.	5·0	
„ 21 ...	6 a.m.	S.E.	0·5	Cir. Cum.	N.E.	5·0	
„ 21 ...	7 a.m.	N.E. by E.	0·5	Cir. Cum.	N.E.	9·0	
„ 22 ...	8 a.m.	N.E. by E.	1·0	Cirri	S.	3·0	
„ 22 ...	9 a.m.	N. ½ W.	4·0	Cir. Cu.	S.	0·5	Cir. Str., Cir. E.
„ 22 ...	11 a.m.	N.	3·0	Cir. Cu.	...	2·0	Cir. Str., Cir. E.
„ 22 ...	Noon	N.	5·0	Cir. Cu. & Cum.	S.E.	3·0	Cir. Str.
„ 22 ...	1 p.m.	N.	3·0	Cir. Cu. & Cum.	S.S.E.	4·0	Cir. Str.
„ 22 ...	3 p.m.	N. by W.	3·0	Cir. Str. & Cu. Str.	S.E.	9·0	Cum.
„ 23 ...	1 a.m.	N.E.	1·0	Strat.	S.E.	10·0	Cir. Str.
„ 23 ...	4 a.m.	N.E. by N.	5·0	Cir. Cum.	S.S.E.	9·5	Cir. Str.
„ 23 ...	1 p.m.	N.E. by E.	5·0	Nimb.	S.E.	9·5	Cir. Str. Veil. Rain.
„ 23 ...	5 p.m.	N.E.	8·0	Cu. Str. & Nimb.	W.	8·0	Rain.
„ 23 ...	7 p.m.	N.E.	2·0	Strat.	N.	9·0	
„ 25 ...	7 a.m.	N.E. by E.	2·0	Cu. Str.	N.E.	10·0	Cir. Cum.
„ 25 ...	6 p.m.	N.E.	1·0	Cu. O., Cu. Str.	S. by W.	7·0	Cir., Cir. Str. N.N.E.
„ 26 ...	8 a.m.	N. by E.	4·0	Nimb.	E.N.E.	10·0	Cir. Cu., Cir. Str.
„ 26 ...	7 p.m.	S.W.	6·0	Nimb.	N.E.	10·0	Rain.
„ 27 ...	2 a.m.	W.	2·0	Cum. & Cir. Cum.	N.N.E.	1·0	
„ 27 ...	3 a.m.	W.	3·0	Cum. & Cir. Cum.	N.E.	3·0	Dew.
„ 27 ...	4 a.m.	W.	3·0	Cir. Cu., Cu. Str.	N.E.	3·0	Dew.
„ 27 ...	5 a.m.	W.	2·0	Cir. Cu., Cu. Str.	N.	3·0	Dew.
„ 27 ...	6 a.m.	W.	3·0	Cir. Cu., Cu. Str.	N.	4·0	
„ 27 ...	3 p.m.	S.	4·0	Cir. Cu., Cu. Str.	E.N.E.	3·0	

UPPER CURRENTS OF AIR—*continued.*

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1859.							
JANUARY 28 ...	6 a.m.	S.S.W.	1·0	Cir., Cu. Str.	S.E. by E.	1·0	Veil.
„ 28 ...	1 p.m.	S.S.W.	3·0	...	E.	4·0	
„ 28 ...	3 p.m.	S.	2·0	Cir. Str.	S.E. by E.	7·0	
„ 28 ...	4 p.m.	S.S.E.	2·0	Veil, Cir. Str.	S.E. by E.	8·0	
„ 28 ...	5 p.m.	S. by E.	2·0	Veil, Cir. Str.	S.E. by E.	9·0	Clouds moving rapidly.
„ 28 ...	7 p.m.	S.	1·0	Cir. Str. & Cir. Cu.	S.E.	7·0	Cir. Str. & Cir. Cu.
„ 29 ...	7 a.m.	N.W. ½ W.	0·5	Cir. Cum.	S.W.	7·0	
„ 29 ...	8 a.m.	N.W. ½ W.	0·2	Cum.	N.E.	5·0	Cir. Cum. S.W.
„ 29 ...	1 p.m.	S.	3·0	Cir. Str.	N.	9·0	Cir. Cu., Cu.
„ 29 ...	4 p.m.	S.	2·0	Str. & Cu. O.	E.N.E.	9·0	Cir. Cu., Cu.
„ 29 ...	2 p.m.	S. ½ W.	3·0	Cir. Str.	E.	8·0	Cir. Cu., Cu.
„ 29 ...	3 p.m.	S.	2·0	Cir. Str.	E.	8·0	Cir. Cu., Cu.
„ 29 ...	5 p.m.	S. ½ W.	2·0	Str. & Cu. O.	N.E.	9·0	Cir. Cum., Cum.
„ 30 ...	10 a.m.	S. by E.	2·0	Cir. Cu., Cu. Str.	N.W. by W.	8·0	
„ 31 ...	10 a.m.	W. ½ S.	0·5	Cir. Str. Veil.	N.	1·0	
FEBRUARY 1 ...	10 a.m.	S. ½ W.	2·0	Cir. Cu., Cir. Str.	S. & E.	1·0	Cir. Cu., Cir. Str. N.
„ 1 ...	3 p.m.	S. by W.	3·0	Cir. Cu.	N.N.E.	0·5	Veil.
„ 6 ...	5 p.m.	N.W. ½ N.	3·0	Strat.	...	7·0	Cir.Cu., Cir.Str. S.E.byE.
„ 6 ...	6 p.m.	N.W. by N.	1·0	Strat.	...	7·0	Cir.Cu., Cir.Str. E. by S.
„ 6 ...	7 p.m.	N.	1·0	Cir. Cu., Cu. Str.	S.E. by E.	7·0	
„ 6 ...	8 p.m.	N.	2·0	Cir. Cu., Cu. Str.	S.E.	9·5	
„ 7 ...	Noon	S.	1·0	Cu. Str.	N.E.	2·0	Cir. Cum.
„ 7 ...	8 p.m.	S.E.	1·0	Cir. Str.	N.E.	2·0	
„ 8 ...	9 a.m.	S.S.W.	2·0	Cu. Str.	E. by N.	9·0	
„ 8 ...	Noon	S. ½ E.	2·0	Cir. Cum., Cum. Str.	E. by N.	9·0	
„ 8 ...	3 p.m.	S. by E.	2·0	Cir. Cum., Cum. Str.	E.	6·0	
„ 8 ...	5 p.m.	S.E. ½ S.	2·0	Cum. Str.	E.S.E.	7·0	Cir. Str.
„ 9 ...	5 a.m.	N.W. by W.	1·0	Cum. Str.	...	2·0	Cir. Str. N.E.
„ 9 ...	5 p.m.	S.W. by S.	4·0	Cu. Str. & Nimb.	E. by S.	10·0	
„ 9 ...	6 p.m.	S.W.	3·0	Cir. Cu., Cu. Str.	N.E.	8·0	Rain.
„ 9 ...	7 p.m.	S.W.	3·0	Nimb.	E.N.E.	9·0	Rain.
„ 10 ...	6 a.m.	N.E.	0·5	Nimb.	N.	10·0	Cu. Str.
„ 10 ...	2 p.m.	S. by E.	1·0	Cir. Cum.	...	8·0	Cir. Cum. S.E.
„ 10 ...	4 p.m.	S.S.W.	3·0	Cir. Cu.	N.W.	4·0	Cir. Cu., Cu. Str. S.E.
„ 11 ...	9 a.m.	N. by E.	5·0	Cu. Str.	S.W. by W.	10·0	Cir. Strat.
„ 11 ...	10 a.m.	N. by E.	5·0	Cu. Str.	...	10·0	Cir. Strat. S.E. by E.
„ 12 ...	4 a.m.	N.	3·0	Cir. Cu., Cu. Str.	N.E.	9·0	
„ 12 ...	5 a.m.	N.	5·0	Cir. Cu., Cu. Str.	E.	4·0	
„ 12 ...	6 a.m.	N.	4·0	Cir. Cu., Cu. Str.	E.	3·0	
„ 12 ...	10 a.m.	N.N.W.	4·0	Cir. Cu., Cu. Str.	E.N.E.	9·5	
„ 12 ...	Noon	N.N.W.	5·0	Cu. Str.	E.S.E.	10·0	
„ 12 ...	3 p.m.	N. by W.	8·0	Cu.Str., Str. & Nimb.	E.S.E.	9·0	Squally.
„ 12 ...	6 p.m.	W. ½ N.	4·0	Nimb.	E.S.E.	9·5	
„ 12 ...	7 p.m.	W.	5·0	Nimb.	E.	9·0	Cir. Cu., Cu. Str. Rain.
„ 13 ...	2 p.m.	W.S.W.	2·0	Cu. Str.	E.	5·0	Cir. Cum., Cir. Str.
„ 13 ...	3 p.m.	S. by W.	3·0	Cu. Str.	E.	6·0	Cir. Cum., Cir. Str.
„ 13 ...	4 p.m.	S. ½ E.	3·0	Cu. Str.	S.E. by E.	5·0	Cir. Cum., Cir. Str.
„ 13 ...	6 p.m.	S.S.E.	3·0	Cir. Cu.	S.E. by E.	6·0	Cir. Str. Veil.
„ 13 ...	8 p.m.	S.E.	1·0	Cir. & Cir. Str.	E.N.E.	9·0	Cir. Str. Veil.
„ 14 ...	1 p.m.	S.	1·0	Cir. Cu.	S.S.E.	10·0	Veil. Solar Halo.
„ 14 ...	7 p.m.	S. ½ E.	2·0	Cir. Str. & Cir. Cu.	S.E.	4·0	
„ 14 ...	9 p.m.	S.E.	1·0	Cir. Str. & Cir. Cu.	S.E.	3·0	
„ 14 ...	11 p.m.	E.S.E.	1·0	Cir. Cu.	S.E.	1·0	
„ 15 ...	Noon	S. by W.	2·0	Cir. Cu., Cu. Str.	E.S.E.	2·0	Rain.
„ 16 ...	2 a.m.	E.S.E.	0·5	Cu. Str., Cu. O.	N.N.E.	5·0	Cir. Cum. Dew.
„ 16 ...	3 a.m.	N.N.W.	1·0	Cir. Cum., Cu. Str.	N.N.E.	4·0	Dew.

UPPER CURRENTS OF AIR—*continued.*

DATE.	HOUR.	WIND.		CLOUDS, 1ST STRATUM.		AMOUNT OF CLOUD.	REMARKS.
		Direction.	Force.	Form.	Direction.		
1859.							
FEBRUARY 16 ...	5 a.m.	W. ½ S.	3·0	Cir. Cum., Cu. Str.	N^{by}.	4·0	
„ 16 ...	6 p.m.	S.	5·0	Cu. Str., Cu. O.	N.N.E.	9·0	
„ 16 ...	10 p.m.	S.E.	1·0	Cir. Cum., Cu. Str.	N.	3·0	
„ 16 ...	11 p.m.	S.E.	1·0	Cir. Cum., Cu. Str.	N.	6·0	
„ 17 ...	1 a.m.	E.	1·0	Cir. Cu., Cu. Str.	N. by E.	6·0	Dew.
„ 17 ...	2 a.m.	E.	1·0	Cir. Cu., Cu. Str.	N. by E.	3·0	Dew.
„ 17 ...	10 a.m.	S. ½ E.	3·0	Cir. Cu., Cu. Str.	N.N.W.	3·0	
„ 17 ...	3 p.m.	S.W. by S.	5·0	Cum.	W.	5·0	Cir. Cum.
„ 17 ...	4 p.m.	S.W. by W.	4·0	Cum.	N.W.	1·0	Cir. Cum.
„ 17 ...	5 p.m.	S.W.	3·0	Cir. Cum.	N.W.	3·0	
„ 19 ...	3 a.m.	N.E. by N.	0·5	Cir. Cum.	E.	10·0	Veil.
„ 20 ...	7 p.m.	N.E. ½ N.	3·0	Cu. Str.	S.	4·0	Cir. Cu.
„ 21 ...	Midnight	W.S.W.	3·0	Cir. Cum.	N.	10·0	
„ 22 ...	3 a.m.	S.S.E.	1·0	Veil clouds.	S.E.	10·0	Lunar Halo.
„ 22 ...	6 a.m.	W.	1·0	Cu. Str. Veil	S.W.	10·0	
„ 22 ...	4 p.m.	S.	1·0	Cum. Str.	E.S.E.	9·0	
„ 22 ...	5 p.m.	S.S.E.	1·0	Cum. Str.	S.E. by S.	9·5	
„ 22 ...	6 p.m.	E. ½ N.	1·0	Nimb.	E.S.E.	10·0	Cir. Cum.
„ 23 ...	Midnight	S. by E.	3·0	Cum. Str.	S.	9·0	Cirri.
„ 23 ...	3 a.m.	S.S.E.	2·0	Cum.	S.W.	4·0	Dew.
„ 23 ...	6 a.m.	S.S.W.	3·0	Nimb. & Cum.	S.W.	5·0	
„ 23 ...	5 p.m.	S.E.	3·0	Cum. & Nimb.	S.	8·0	
„ 23 ...	6 p.m.	S.S.E.	2·0	Cum. & Nimb.	S.	7·0	
„ 24 ...	1 a.m.	S.W.	4·0	Cu. Str.	N.	7·0	
„ 24 ...	10 p.m.	W. by S.	2·0	Cu. Str.	N.E.	9·5	
„ 25 ...	9 a.m.	S.W. by W.	2·0	Cu. Str.	E.N.E.	8·0	
„ 25 ...	7 p.m.	W. by S.	3·0	Cu. Str.	N.	8·0	Cir. Cu., Cir. Str. Squally.
„ 26 ...	6 a.m.	W.	2·0	Cir. Cu., Cu. Str.	N.E.	5·0	
„ 26 ...	7 p.m.	S. by E.	2·0	Scud.	N.N.E.	4·0	Cir. Cu., Cu. Str. E.
„ 27 ...	9 a.m.	S.E. by E.	1·0	Cu. Str., Str.	N.	7·0	Cir. Str.
„ 27 ...	2 p.m.	S. by W.	2·0	Cir. Cu. & Cir. Str.	N.W. by W.	6·0	
„ 27 ...	4 p.m.	S.W. by S.	2·0	Str., Cir. Cum.	N.N.W.	3·0	Veil.

XII.—NEGATIVE ELECTRICITY.

97. ENUMERATION OF THE SINGLE REGISTRATIONS, AND CIRCUMSTANCES UNDER WHICH THEY OCCURRED.

DATE.	HOUR.	AMOUNT.	ZENITH.	WIND.		RAIN.	DUST.	REMARKS.
				Direction.	Force.			
1858.								
APRIL 15 ...	8 a.m.	5·99	Clear	N.	5·0	0	D	
„ 15 ...	9 a.m.	10·30	Clear	N.	6·0	0	D	Great clouds of dust.
„ 15 ...	10 a.m.	10·45	Clear	N. ½ E.	5·0	0	D	
„ 15 ...	11 a.m.	3·00	Clear	N. ½ E.	5·0	0	D	
„ 15 ...	Noon	3·77	Clear	N. ½ W.	4·0	0	D	
„ 15 ...	1 p.m.	3·24	Clear	N. by E.	4·0	0	D	
„ 15 ...	2 p.m.	1·73	Clear	N. ½ W.	2·0	0	D	
„ 16 ...	1 p.m.	4·14	Cum. Str.	S. by E.	5·0	0	0	
„ 21 ...	1 p.m.	2·07	Clear	N.	3·0	0	0	Hazy.
„ 22 ...	9 a.m.	9·09	Cir. Cum.	N.W. by W.	3·0	0	D	
„ 28 ...	1 a.m.	∞	Nimb.	N.E.	1·0	B	0	Spark.
MAY 4 ...	11 a.m.	∞	Clear	N.N.E.	6·0	0	D	
„ 5 ...	11 a.m.	8·93	Clear	N.	5·0	0	D	
„ 5 ...	Noon	4·15	Clear	N.	6·0	0	D	
„ 5 ...	1 p.m.	4·64	Clear	N.	6·0	0	D	
„ 6 ...	8 a.m.	9·82	Clear	N. by E.	4·0	0	D	
„ 6 ...	9 a.m.	6·30	Clear	N. by E.	6·0	0	D	
„ 6 ...	10 a.m.	5·09	Cum.	N. ½ E.	6·0	0	D	
„ 6 ...	11 a.m.	4·30	Cu. Str.	N.	7·0	0	D	
„ 6 ...	Noon	∞	Cu. Str.	N.	7·0	0	D	Furious gale.
„ 6 ...	1 p.m.	∞	Cu. Str.	N.	9·0	0	D	Immense clouds of dust. Spark.
„ 6 ...	2 p.m.	5·54	Clear	N.N.E.	6·0	0	D	
„ 6 ...	4 p.m.	10·73	Nimb.	W.	2·0	0	0	After a violent rain.
„ 6 ...	5 p.m.	∞	Nimb.	N.E.	2·0	B	0	Gentle rain.
„ 12 ...	7 a.m.	∞	Nimb.	N. by E.	1·0	0	D	
„ 12 ...	8 a.m.	∞	Cu. Str.	N.N.E.	4·0	0	0	
„ 12 ...	11 a.m.	∞	Cir. Cum.	N.N.E.	5·0	0	D	
„ 12 ...	Noon	9·72	Cir. Cum.	N.N.E.	8·0	0	D	Heavy squalls.
„ 12 ...	1 p.m.	6·03	Cir. Cum.	N. by E.	5·0	0	D	
„ 13 ...	4 p.m.	4·73	Nimb.	N.W. by W.	3·0	0	0	Rain immediately before and after registration.
„ 20 ...	1 a.m.	1·84	Nimb.	W. by N.	1·0	B	0	Heavy showers.
JUNE 6 ...	11 a.m.	7·17	Clear	N.	8·0	0	D	
„ 6 ...	1 p.m.	5·09	Clear	N.	7·0	0	0	
„ 6 ...	10 p.m.	10·74	Cir. Cu.	N.E. by N.	6·0	0	D	
„ 7 ...	11 a.m.	∞	Nimb.	N.	8·0	B	D	Few drops of heavy rain, and clouds of dust.
„ 16 ...	Noon	2·67	Cir. Cu.	N. ½ W.	3·5	0	0	A few minutes after a squall from N. (5.)
„ 16 ...	1 p.m.	1·43	Cir. Str.	N. by W.	3·0	0	0	
„ 18 ...	10 a.m.	4·55	Cir. Str.	N.	5·0	0	D	
„ 18 ...	11 a.m.	1·69	Cirri	N.	5·0	0	D	
„ 18 ...	Noon	1·74	Cirri	N.	5·0	0	0	
„ 20 ...	10 a.m.	2·01	Cum. Str.	N.E. by N.	1·0	B	0	Heavy rain.
„ 20 ...	4 p.m.	2·64	Cirri.	N.	2·0	0	0	
„ 21 ...	8 p.m.	10·54	Cir. Cu.	S.W.	1·0	0	0	
„ 21 ...	9 p.m.	∞	Nimb.	N.W.	1·0	0	0	
JULY 4 ...	3 p.m.	10·53	Nimb.	E.N.E.	1·0	B	0	
„ 4 ...	5 p.m.	4·78	Nimb.	W.	1·0	0	0	
„ 5 ...	8 a.m.	9·89	Nimb.	E.	1·0	0	0	
„ 7 ...	3 p.m.	10·22	Nimb.	W. by S.	1·0	B	0	

NEGATIVE ELECTRICITY—*continued.*

DATE.	HOUR.	AMOUNT.	ZENITH.	WIND.		RAIN.	DUST.	REMARKS.
				Direction.	Force.			
1858.								
JULY 8 ...	3 p.m.	∞	Cirri	E. by N.	3·0	0	0	
„ 9 ...	Noon	1·15	Cir. Str.	N.	6·0	0	0	
„ 9 ...	3 p.m.	1·58	Cirri	N. ½ W.	6·0	0	0	
„ 10 ...	Midnight	1·54	Cum. Str.	N.	6·0	0	0	
„ 10 ...	1 a.m.	1·28	Cum. Str.	N.	7·0	0	0	
„ 10 ...	2 a.m.	0·50	Cum. Str.	N.	7·0	0	0	
„ 11 ...	2 p.m.	10·88	Cum. Str.	E.	1·0	0	0	
„ 12 ...	8 a.m.	9·69	Nimb.	S.S.E.	1·0	B	0	
„ 12 ...	10 a.m.	2·48	Nimb.	S.W.	1·0	B	0	
„ 12 ...	11 a.m.	3·43	Nimb.	N.N.W.	1·0	B	0	
„ 17 ...	4 p.m.	∞	Cu. Str.	W. by S.	4·0	0	0	
„ 20 ...	11 p m.	∞	Nimb.	N.	4·0	B	0	
AUGUST 7 ...	6 p.m.	3·85	Cu. Str.	W.	2·0	0	0	Clouds of a dull grey.
„ 10 ...	3 a.m.	0·50	Nimb.	N.	5·0	0	0	Very squally.
„ 10 ...	8 a.m.	8·49	Nimb.	N.E.	4·0	B	0	Heavy grey clouds passing over Z.
„ 11 ...	8 a.m.	∞	Nimb.	W.	1·0	0	0	
„ 18 ...	11 p.m.	2·38	Nimb.	N.	2·0	B	0	
„ 19 ...	Midnight	4·42	Cir. Cu.	N.N.E.	2·0	0	0	
„ 19 ...	1 a.m.	4·58	Cir. Str.	N. by E.	3·0	0	0	
„ 19 ...	2 a.m.	8·92	Cir. Str.	N.	5·0	0	D	A perfect storm; quantities of dust.
„ 23 ...	9 a.m.	1·43	Clear	N.	7·0	0	D	Clouds of dust.
„ 23 ...	4 p.m.	6·34	Cir. Str.	N.	4·0	0	0	
„ 24 ...	8 a.m.	10·19	Cir. Cu.	N.N.E.	7·0	0	D	
„ 24 ...	1 p.m.	∞	Cir. Cu.	W.	6·0	0	D	Just at register time the wind went round to W., carrying tremendous clouds of dust.
„ 24 ...	3 p.m.	7·54	Cu. Str.	W.	7·0	0	0	Squalls of 8 and more.
„ 27 ...	9 p.m.	∞	Nimb.	N.E.	1·0	0	0	
„ 27 ...	10 p.m.	7·79	Nimb.	E.	1·0	0	0	Heavy drops of rain.
„ 28 ...	Midnight	∞	Cir. Cu.	N.E.	1·0	0	0	Thunder, bright flashes of lightning.
„ 28 ...	1 a.m.	∞	Cir. Cu.	N.E.	1·0	0	0	Flashes of lightning.
„ 28 ...	2 a m.	∞	Cir. Cu.	E.	1·0	0	0	Lightning at times.
„ 29 ...	2 p.m.	6·28	Cir. Str. & Nimb.	N.W.	3·0	B	0	Very fine misty rain.
„ 29 ...	3 p.m.	2·94	Nimb.	N.W.	4·0	B	0	Same, and squally.
„ 29 ...	4 p.m.	∞	Nimb.	W.	5·0	B	0	Heavy squalls from W., with heavy rain.
„ 30 ...	2 p.m.	3·00	Nimb.	W. by S.	7·0	B	0	Heavy rain.
SEPT. 2 ...	1 p.m.	8·93	Nimb.	W.	2·0	B	0	
„ 2 ...	2 p.m.	1·80	Nimb.	W. ½ S.	2·0	B	0	Dense rain.
„ 2 ...	8 p.m.	9·08	Nimb.	W.N.W.	2·0	B	0	
„ 6 ...	6 p m.	∞	Nimb.	S.W.	5·0	B	0	Heavy rain, with squalls.
„ 7 ...	11 a m.	3·98	Nimb.	S.W.	5·0	B	0	Smart fine rain from S.W.
„ 10 ...	10 a.m.	5·92	Cirri	N.	4·0	0	D	Quantities of dust.
„ 10 ...	11 a m.	4·23	Cirri	N. by E.	5·0	0	D	
„ 10 ...	Noon	5·98	Clear	N. by E.	6·0	0	D	Regular hot wind.
„ 10 ...	1 p.m.	0·50	Clear	N.N.E.	4·0	0	0	
„ 11 ...	Noon	∞	Nimb.	S.W.	4·0	B	0	Uniform grey vaporous clouds.
„ 11 ...	1 p.m.	∞	Nimb.	S.W. by W.	2·0	B	0	Same.
„ 11 ...	2 p.m.	5·99	Nimb.	W. by S.	3·0	B	0	Regular winter rain.
„ 12 ...	1 p.m	4·03	Cir. Cu.	S.W.	3·0	0	0	Light squalls, with rain at times.
„ 12 ...	2 p.m.	∞	Cir. Cu.	S S.W.	3·0	0	0	Squall at 1h. 50m., hail and rain mixed.
„ 12 ...	3 p.m.	∞	Cir. Cu.	S.W.	3·0	B	0	Smart rain.
„ 12 ...	4 p.m.	3·15	Cir. Cu.	S.W.	2·0	B	0	
„ 13 ...	10 p.m.	∞	Nimb.	N.E.	4·0	B	0	Rain commenced precisely at 10h.
„ 14 ...	Midnight	∞	Nimb.	N.N.E.	5·0	B	0	Squalls of about 7.
„ 15 ...	2 p.m.	4·32	Cir. Cu.	N.W.	7·0	0	D	Great clouds of dust.
„ 15 ...	3 p.m.	∞	Cir. Cu. & Nimb.	W.	7·0	B	0	A hurricane of at least 9, from W., with hail and rain.
„ 16 ...	3 p.m.	∞	Cu. Str. & Nimb.	W.S.W.	2·0	B	0	
„ 18 ...	10 a m.	4·27	Cir. Cu.	N by W.	5·0	0	D	Warm wind, with more or less dust.

NEGATIVE ELECTRICITY—*continued.*

DATE.	HOUR.	AMOUNT.	ZENITH.	WIND.		RAIN.	DUST.	REMARKS.
				Direction.	Force.			
1858.								
SEPT. 18 ...	2 p.m.	1·59	Cir. Cu.	N.	5·0	0	D	Squally.
„ 20 ...	8 p.m.	0·50	Nimb.	N.W.	4·0	0	D	Great clouds of dust.
„ 21 ...	8 a.m.	∞	Nimb.	S.W.	4·0	B	0	
„ 21 ...	Noon	6·77	Cum.	S.W.	2·0	0	0	
„ 21 ...	1 p.m.	∞	Nimb.	S.	1·0	0	0	
„ 22 ...	7 a.m.	7·45	Nimb.	N.	6·0	0	0	Gale of wind.
„ 22 ...	8 a.m.	∞	Nimb.	N.N.E.	7·0	0	D	Great quantity of dust.
„ 22 ...	9 a.m.	∞	Nimb.	N. by E.	10·0	0	D	A fearful storm; whole air full of dust, the wind not blowing in gusts, but almost constantly.
„ 22 ...	4 p.m.	3·87	Nimb.	N.	4·0	B	0	Very squally.
„ 23 ...	1 a.m.	2·50	Nimb.	S.W. ½ W.	4·0	B	0	Heavy rain, and very dull looking sky.
„ 23 ...	2 a.m.	3·45	Nimb.	W.	1·0	B	0	Heavy rain.
„ 23 ...	3 a.m.	1·50	Nimb.	N.W.	3·0	0	0	
„ 24 ...	1 p.m.	1·77	Nimb.	S.W. by W.	6·0	0	0	
„ 24 ...	3 p.m.	1·39	Nimb.	W.S.W.	3·0	0	0	Rather smart rain.
„ 26 ...	3 p.m.	1·94	Nimb.	W. by S.	2·0	0	0	Fine rain at times.
„ 26 ...	4 p.m.	6·62	Nimb.	W. by S.	2·0	B	0	Squall of 4, with rain, at 3h. 54m.
„ 28 ...	9 a.m.	8·89	Cu. Str.	N.	6·0	0	D	Clouds of dust.
„ 28 ...	10 a.m.	3·25	Cu. Str.	N.	7·0	0	D	Same.
„ 28 ...	2 p.m.	10·07	Nimb.	N.N.E.	3·0	B	0	Scattered rain, large drops.
„ 29 ...	10 a.m.	3·29	Nimb.	S.W.	4·0	B	0	Heavy squall.
OCT. 5 ...	Noon	2·05	Cir. Cu.	N.	1·0	0	0	
„ 5 ...	1 p.m.	2·95	Cir. Cu.	N.E.	0·5	0	0	
„ 8 ...	7 a.m.	5·02	Nimb.	N.N.E.	5·0	B	D	Few drops of rain, and dust.
„ 8 ...	6 p.m.	∞	Nimb.	S.	2·0	B	0	
„ 14 ...	1 p.m.	6·79	Clear	S.E.	1·0	0	0	
„ 14 ...	2 p.m.	3·60	Clear	S. ½ W.	3·0	0	D	Several dust whirls.
„ 15 ...	7 a.m.	∞	Cu. Str.	N.E. by N.	5·0	0	D	Great clouds of dust.
„ 15 ...	8 a.m.	∞	Cu. Str.	N.N.E.	5·0	0	D	Same.
„ 15 ...	9 a.m.	5·89	Cu. Str.	N.N.E.	5·0	0	D	Same.
„ 15 ...	10 a.m.	6·05	Cu. Str.	N.N.E.	5·0	0	D	Same.
„ 15 ...	11 a.m.	5·57	Cu. Str.	N.N.E.	5·0	0	D	Same.
„ 15 ...	Noon	∞	Cu. Str.	N.	5·0	0	D	Same.
„ 15 ...	1 p.m.	4·04	Cu. Str.	N.E. by N.	5·0	0	0	
„ 15 ...	2 p.m.	0·50	Cir. Str., Veil.	N. by E.	5·0	0	0	
„ 15 ...	3 p.m.	4·85	Veil	N.N.E.	5·0	0	0	
„ 16 ...	4 a.m.	∞	Cu. Str.	N.	6·0	0	D	Clouds of dust.
„ 16 ...	5 a.m.	∞	Cu. Str.	N.	6·0	0	D	Same.
„ 16 ...	6 a.m.	∞	Cu. Str.	N.	6·0	0	D	Same.
„ 16 ...	7 a.m.	9·25	Cu. Str.	N.	7·0	0	D	Same.
„ 16 ...	8 a.m.	0·50	Cu. Str.	N.	6·0	0	D	Same.
„ 16 ...	9 a.m.	∞	Cu. Str.	N. by W.	6·0	0	D	Wind blowing at times 7.
„ 16 ...	10 a.m.	∞	Cu. Str.	N.N.W.	7·0	0	D	
„ 16 ...	Noon	1·49	Cir. Cu.	N.W. by N.	4·0	B	0	A few drops of rain.
„ 16 ...	1 p.m.	2·83	Cir. Cu.	S. ½ W.	3·0	0	0	
„ 16 ...	5 p.m.	∞	Nimb.	W.	1·0	B	0	A few drops of misty rain.
„ 16 ...	7 p.m.	∞	Nimb.	N.W. by W.	3·0	B	0	
„ 17 ...	9 a.m.	∞	Nimb.	W.S.W.	5·0	B	0	
„ 17 ...	10 a.m.	∞	Nimb.	W. by S.	5·0	B	0	Cold squalls, with fine rain.
„ 18 ...	9 a.m.	∞	Cu. Str.	N. by E.	6·0	0	D	Plenty of dust.
„ 18 ...	10 a.m.	∞	Cu. Str.	N.E. by N.	6·0	0	D	
„ 18 ...	11 a.m.	6·33	Cu. Str.	N. by W.	6·0	0	D	
„ 18 ...	Noon	∞	Cu. Str.	N. by W.	6·0	0	D	
„ 18 ...	1 p.m.	∞	Cu. Str.	N. by W.	6 0	0	D	
„ 18 ...	2 p.m.	∞	Cu. Str.	N. by W.	8·0	0	D	
„ 18 ...	3 p.m.	3·53	Cu. Str.	N. by W.	6·0	0	D	Strong gusts at times.
„ 18 ...	4 p.m.	7·89	Cir. Str.	N. ½ W.	7·0	0	D	

NEGATIVE ELECTRICITY—*continued.*

DATE.	HOUR.	AMOUNT.	ZENITH.	WIND.		RAIN.	DUST.	REMARKS.
				Direction.	Force.			
1858.								
Oct. 18 ...	5 p.m.	0·50	Cir. Str.	N.	6·0	0	D	
„ 19 ...	7 a.m.	5·83	Nimb.	W.S.W.	5·0	B	0	Heavy squall and storm at register time
„ 20 ...	9 a.m.	2·32	Nimb.	S. by W.	4·0	B	0	Heavy rain.
„ 20 ...	10 a.m.	∞	Nimb.	S.S.W.	4·0	B	0	Heavy continuous rain.
„ 20 ...	11 a m.	0·50	Nimb.	S.W.	3·0	B	0	Heavy shower of rain, with hail.
„ 21 ...	9 a.m.	2·13	Cir. Cu.	S.W.	3·0	0	0	
„ 24 ...	9 a.m.	3·80	Cir. Cu.	N.	4·0	0	D	
„ 24 ...	10 a.m.	∞	Cir. Str.	N. by W.	5·0	0	D	
„ 24 ...	11 a.m.	∞	Cir. Str.	N.	6·0	0	D	Quantities of dust.
„ 24 ...	Noon	2·57	Cir. Str.	N. by E.	6·0	0	D	
„ 24 ...	1 p.m.	4·63	Cir. Str.	N.	5·0	0	D	
„ 25 ...	4 a.m.	7·54	Cir. Str.	N. by E.	6·0	0		
„ 25 ...	6 a.m.	7·94	Cir. Str.	N. by E.	6·0	0		
„ 25 ...	7 a.m.	∞	Cir. Str.	N.E. by E.	6·0	0		
„ 25 ...	8 a.m.	∞	Cir. Str.	N. ½ W.	6·0	0		
„ 25 ...	9 a.m.	∞	Cir. Str.	N. by W.	6·0	0		
„ 25 ...	10 a.m.	∞	Cirri	N. by W.	6·0	0	0	
„ 25 ...	Noon	∞	Cir. Cum.	N. by W.	6·0	0	0	
„ 25 ...	1 p.m.	2·12	Cir. Cum.	N.N.W.	6·0	0	D	Dust whirl.
„ 25 ...	3 p.m.	∞	Nimb.	S.	6·0	0	0	Heavy Nimb.
„ 25 ...	10 p.m.	4·93	Nimb.	S.E. by S.	2·0	0	0	Rain commenced at 10h. 8m.
Nov. 1 ...	Noon	0·50	Cu. Str.	N.N.E.	2·0	0	0	Dull sky.
„ 1 ...	1 p.m.	0·50	Nimb.	N. ½ E.	4·0	0	0	
„ 1 ...	2 p.m.	3·18	Cu. Str.	N.E.	1·0	0	0	
„ 1 ...	6 p.m.	0·50	Nimb.	S.	3·0	0	D	Great clouds of dust at 5h. 45m.
„ 1 ...	8 p.m.	∞	Nimb.	S.	1·0	B	0	
„ 1 ...	11 p.m.	∞	Nimb.	S.E.	1·0	0	0	
„ 4 ...	11 a.m.	∞	Clear	N.	3·0	0	0	
„ 4 ...	Noon	4·04	Clear	N.E. by N.	4·0	0	0	
„ 4 ...	1 p.m.	3·83	Clear	N.E. by N.	4·0	0	0	
„ 6 ...	4 p.m.	5·50	Cir. Cu.	E. by S.	3·0	0	0	
„ 10 ...	Noon	3·72	Cum.	S.	2·0	0	0	
„ 11 ...	7 a.m.	9·49	Cum.	N.E. by N.	4·0	0	0	
„ 11 ...	8 a.m.	∞	Cir. Str.	N.	5·0	0	D	Clouds of dust.
„ 11 ...	9 a.m.	∞	Cir. Str.	N.N.E.	5·0	0	D	Same.
„ 11 ...	10 a.m.	∞	Cir. Str.	N.N.E.	6·0	0	D	Same.
„ 11 ...	11 a.m.	∞	Cir. Str.	N. by E.	6·0	0	D	Same.
„ 11 ...	Noon	5·73	Cum.	N.	5·0	0	D	Same.
„ 11 ...	1 p.m.	2·42	Nimb.	N. ½ E.	5·0	0	0	
„ 11 ...	4 p.m.	0·50	Cir. Cu.	N. ½ E.	4·0	0	0	
„ 11 ...	5 p.m.	∞	Nimb.	N.	5·0	0	0	Distant thunder-and lightning; very black clouds, heavy rain falling to W. and S.
„ 11 ...	6 p.m.	∞	Nimb.	N.W. by W.	6·0	B	0	Heavy thunder storm and heavy rain; very dense clouds of dust, of short duration.
„ 13 ...	5 a.m.	4·87	Nimb.	N.N.E.	1·0	B	0	
„ 13 ...	6 a.m.	∞	Nimb.	N. by W.	1·0	B	0	
„ 13 ...	7 a.m.	∞	Nimb.	N.N.W.	1·0	B	0	Distant thunder.
„ 13 ...	9 a.m.	∞	Nimb.	E. by N.	2·0	B	0	
„ 17 ...	6 a.m.	∞	Nimb.	N.	5·0	0	D	Thunder and lightning.
„ 20 ...	9 a m.	4·98	Nimb.	N.N.W.	3·0	0	0	Several small whirlwinds.
„ 21 ...	9 a.m.	5·64	Strat.	N. by E.	6·0	0	D	Hot winds and dust.
„ 21 ...	11 a.m.	9·25	Strat.	N. by W.	5·0	0	D	Wind blowing irregular, with occasional clouds of dust.
„ 21 ...	Noon	0·50	Cirri	N.	5·0	0	0	
„ 21 ...	1 p.m.	1·86	Cirri	N.N.W.	5·0	0	0	
„ 22 ...	7 a.m.	∞	Cir. Str.	N.N.E.	5·0	0	D	
„ 22 ...	8 a.m.	8·70	Cir. Str.	N. by E.	5·0	0	D	Great clouds of dust.
„ 22 ...	9 a.m.	4·20	Cir. Str., Veil	N.	5·0	0	D	
„ 22 ...	11 a.m.	∞	Cir. Str.	N.N.W.	6·0	0	D	Sparks. Considerable quantities of dust, but not in clouds.

NEGATIVE ELECTRICITY—*continued.*

DATE.	HOUR.	AMOUNT.	ZENITH.	WIND.		RAIN.	DUST.	REMARKS.
				Direction.	Force.			
1858.								
Nov. 22 ...	Noon	3·23	Veil	N.	6·0	0	0	Fine dust whirl to South.
„ 23 ...	9 a.m.	∞	Cir. Str.	N.N.W.	7·0	0	D	At 8·33 wind veered from N.E. to N.W.; great clouds of dust, the electricity at once ∞ neg.
„ 23 ...	10 a.m.	∞	Cir. Str.	N. by W.	7·0	0	D	
„ 23 ...	11 a.m.	∞	Cir. Str.	N.N.W.	8·0	0	D	
„ 23 ...	Noon	∞	Cir. Cum.	N.N.W.	7·0	0	D	
„ 23 ...	1 p.m.	6·15	Cir. Cum.	S. by W.	6·0	0	D	Wind suddenly changed and veered round to S.W. at 12·37; great clouds of returning dust.
„ 23 ...	2 p.m.	2·25	Cir. Cum.	S.	5·0	0	0	
„ 24 ...	6 a.m.	8·90	Nimb.	S.W.	1·0	B	0	
„ 24 ...	10 a.m.	∞	Cu. Str.	W.	2·0	B	0	
„ 24 ...	4 p.m.	1·70	Nimb.	S. by E.	4·0	0	0	
„ 27 ...	10 a.m.	4·82	Cir. Str.	E.S.E.	1·0	0	0	
„ 27 ...	11 a.m.	2·95	Cir. Str.	S.E.	1·0	0	0	
„ 27 ...	Noon	1·68	Cir. Str.	S.S.E.	2·0	0	0	
„ 28 ...	1 p.m.	1·26	Nimb.	N.E. by E.	4·0	0	0	Dull and hazy.
„ 28 ...	5 p.m.	4·49	Nimb.	E.N.E.	3·0	B	0	
„ 29 ...	2 p.m.	∞	Nimb.	E. by N.	1·0	0	0	Heavy thunder clouds passing to E.; few peals of thunder heard.
„ 29 ...	3 p.m.	∞	Nimb.	N. by E.	1·0	0	0	Same.
„ 29 ...	4 p.m.	∞	Nimb.	E. ½ N.	1·0	0	0	Same.
„ 29 ...	6 p.m.	∞	Nlmb.	N.E.	2·0	0	0	
„ 29 ...	11 p.m.	∞	Nimb.	N.N.W.	4·0	B	0	Heavy rain, thunder and lightning.
„ 30 ...	Midnight	8·65	Nimb.	N. by E.	1·0	B	0	Dull uniform sky, continuous rain.
Dec. 2 ...	10 a.m.	0·50	Cir. Str.	N.	5·0	0	D	Slight dust.
„ 2 ...	11 a.m.	6·34	Cir. Str.	N. by W.	6·0	0	0	
„ 2 ...	Noon	9·29	Cir. Str.	N.	6·0	0	0	
„ 2 ...	1 p.m.	9·12	Cir. Str.	N. ½ E.	6·0	0	0	
„ 2 ...	3 p.m.	7·14	Cum.	N.	4·0	0	0	
„ 2 ...	4 p.m.	3·52	Cum.	N. by W.	3·0	0	0	
„ 2 ...	5 p.m.	5·47	Nimb.	S.S.W.	6·0	0	D	At time of registering the wind shifted suddenly from N. by W. to S.S.W., bringing clouds of dust from the S. part of the city.
„ 3 ...	Midnight	∞	Nimb.	W.	6·0	0	0	Lightning very frequent and bright.
„ 3 ...	8 a.m.	7·35	Cu. Str.	N.	5·0	0	0	
„ 3 ...	10 a.m.	6·67	Cir. Cum.	N. by W.	6·0	0	0	
„ 3 ...	11 a.m.	6·30	Cir. Cum.	N.N.W.	5·0	0	0	
„ 3 ...	1 p.m.	∞	Cu. Str.	N.N.W.	6·0	0	D	Dust whirl S.E. N.W.
„ 3 ...	5 p.m.	∞	Nimb.	S. by W.	4·0	0	0	
„ 3 ...	6 p.m.	5·99	Nimb.	S. by W.	2·0	B	0	A few scattered drops of rain.
„ 3 ...	11 p.m.	7·35	Nimb.	S.S E.	1·0	B	0	Thunder storm, slight rain.
„ 4 ...	Midnight	∞	Nimb.	E.	1·0	0	0	Thunder and lightning all round, showers of rain.
„ 4 ...	1 a.m.	0·50	Nimb.	0	0·0	0	0	Flashes of lightning very vivid, but no thunder.
„ 4 ...	3 p.m.	0·50	Cum.	S. by E.	2·0	0	0	
„ 4 ...	4 p.m.	6·15	Cum.	S.	6·0	0	D	At time of registering a heavy squall coming from S., bringing large quantities of dust.
„ 6 ..	4 p.m.	8·78	Cir. Cu.	S.	2·0	0	0	
„ 7 ...	1 p.m.	6·04	Cir. Cu.	S.	5·0	0	0	
„ 7 ...	4 p.m.	4·28	Cum.	S. ½ W.	5·0	0	0	
„ 7 ...	10 p.m.	∞	Nimb.	S.S.W.	1·0	B	0	Rain commenced at 9·45, mixed with hail.
„ 8 ...	2 a.m.	1·50	Nimb.	N.W.	1·0	0	0	
„ 8 ...	7 a.m.	∞	Nimb.	0	0·0	B	0	
„ 8 ...	8 a.m.	∞	Nimb.	S.	1·0	B	0	Heavy showers of rain.
„ 8 ...	9 a.m.	∞	Nimb.	N.W.	1·0	0	0	
„ 10 ...	6 p.m.	∞	Cir. Cu.	S.	7·0	0	D	
„ 12 ...	7 a m.	∞	Nimb.	N.E. by E.	2·0	B	0	Violent rain.
„ 12 ...	9 a.m.	∞	Nimb.	N.E.	2·0	B	0	
„ 12 ...	10 a.m.	∞	Nimb.	N.E. by N.	1·0	B	0	
„ 12 ...	11 a.m.	∞	Nimb.	N.E.	1·0	B	0	
„ 12 ...	1 p.m.	0·50	Nimb.	N.N.E.	2·0	0	0	
„ 12 ...	2 p.m.	∞	Nimb.	N.N.E.	1·0	0	0	

NEGATIVE ELECTRICITY—*continued.*

DATE.	HOUR.	AMOUNT.	ZENITH.	WIND.		RAIN.	DUST.	REMARKS.
				Direction.	Force.			
1858.								
DEC. 12 ...	4 p.m.	3·79	Nimb.	S.	1·0	0	0	
„ 15 ...	8 a.m.	9·25	Cir. Cu.	N. by E. ½ E.	6·0	0	D	At 7·55, heavy gusts of wind, with dust
„ 15 ...	9 a.m.	∞	Cir. Cu.	N.	5·0	0	0	
„ 15 ...	Noon.	∞	Cu. Str.	S.	6·0	0	0	
„ 15 ...	1 p.m.	7·80	Cir. Cu.	S. by W.	5·0	0	0	Severe gusts of wind.
„ 15 ...	2 p.m.	6·24	Cir. Cu.	S. by W.	6·0	0	D	Thick dust.
„ 15 ...	3 p.m.	∞	Cu. Str.	S. ½ W.	7·0	0	D	Very squally, large quantity of dust in the air.
„ 16 ...	4 p.m.	4·57	Clear	S. by E.	3·0	0	0	
„ 17 ...	4 p.m.	0·50	Cir. Str.	S.	3·0	0	0	
„ 17 ...	5 p.m.	6·65	Cir. Str.	S. by W.	6·0	0	D	
„ 18 ...	1 p.m.	∞	Nimb.	N.W. by N.	6·0	0	D	Dust storm.
„ 18 ...	11 p.m.	∞	Nimb.	S.E.	1·0	B	0	
„ 19 ...	1 a.m.	5·34	Nimb.	E.S.E.	1·0	B	0	
„ 19 ...	2 p.m.	∞	Nimb.	E. ½ N.	2·0	B	0	Thunder.
„ 19 ...	4 p.m.	∞	Nimb.	N.N.W.	3·0	B	0	
„ 19 ...	5 p.m.	4·69	Nimb.	W.S.W.	3·0	B	0	
„ 19 ...	8 p.m.	8·62	Nimb.	W.S.W.	7·0	B	0	
„ 19 ...	9 p.m.	8·44	Nimb.	W.S.W.	7·0	B	0	
„ 19 ...	10 p.m.	∞	Nimb.	W. by S.	7·0	B	0	
„ 19 ...	11 p.m.	∞	Nimb.	W. by S.	7·0	B	0	
„ 20 ...	1 a.m.	5·55	Nimb.	W. by S.	7·0	B	0	
„ 20 ...	8 a.m.	4·70	Nimb.	S.W.	5·0	B	0	Rain, showers, and squalls.
„ 20 ...	10 a.m.	10·00	Nimb.	W. ½ S.	6·0	B	0	
„ 20 ...	11 a.m.	5·81	Nimb.	W. by S.	5·0	0	0	
„ 20 ...	2 p.m.	1·37	Nimb.	S.W. by W.	4·0	0	0	
„ 20 ...	4 p.m.	2·64	Nimb.	S.S.W.	5·0	0	0	
„ 20 ...	5 p.m.	∞	Nimb.	S.W. by W.	2·0	B	0	
„ 20 ...	6 p.m.	∞	Nimb.	W. ½ S.	5·0	0	0	Heavy storm passing to N.
„ 21 ...	10 a.m.	4·98	Nimb.	N.N.W.	1·0	B	0	Gentle rain.
„ 21 ...	11 a.m.	7·67	Nimb.	N.N.W.	2·0	0	0	
„ 26 ...	10 a.m.	3·29	Cum.	N. ½ W.	3·0	0	0	
„ 27 ...	4 p.m.	2·33	Nimb.	W.S.W.	5·0	0	D	Heavy gust of wind, bringing clouds of dust.
„ 30 ...	10 a.m.	5·05	Cir. Cu.	S.W.	1·0	0	0	
„ 30 ...	6 p.m.	1·99	Cum.	S.S.E.	2·0	0	0	
1859.								
JAN. 1 ...	8 a.m.	1·35	...	...	...	...	...	
„ 1 ...	9 a.m.	4·65	Cir. Cu.	N. by E.	5·0	0	0	
„ 1 ...	10 a.m.	6·75	Cir. Str., Veil	N. ½ W.	4·0	0	D	Wind, raising considerable quantities of dust.
„ 1 ...	11 a.m.	8·97	Cir. Str., Veil	N. ½ E.	5·0	0	0	
„ 1 ...	Noon	9·55	Cir. Str., Veil	N. by W.	6·0	0	0	
„ 1 ...	2 p.m.	7·17	Cir. Str., Veil	N.	4·0	0	0	Great many whirlwinds.
„ 3 ...	3 p.m.	3·38	Cu. Str.	S.W. by S.	6·0	0	0	
„ 4 ...	10 a.m.	1·51	Cu. Str.	S.	3·0	0	0	
„ 4 ...	1 p.m.	1·62	Cir. Cum.	S.S.W.	5·0	0	0	
„ 4 ...	3 p.m.	7·32	Cir. Cum.	S. ½ W.	6·0	0	D	Quantities of dust.
„ 4 ...	4 p.m.	6·50	Cir. Cum.	S.	5·0	0	0	
„ 4 ...	7 p.m.	6·33	Strat.	S. by E.	7·0	0	0	
„ 5 ...	3 p.m.	1·94	Cir. Cu.	S.E. ½ E.	2·0	0	0	
„ 5 ...	4 p.m.	3·17	Cir. Cu.	S.E. by S.	2·0	0	0	
„ 6 ...	10 a.m.	1·44	Clear	S.W. by S.	0·5	0	0	
„ 7 ...	2 p.m.	3·62	Cu. Str.	S. by W.	4·0	0	0	Slight veil.
„ 7 ...	3 p.m.	4·32	Cu. Str.	S.S.W.	6·0	0	0	
„ 7 ...	4 p.m.	2·41	Nimb.	S.W. by S.	5·0	0	0	
„ 9 ...	2 p.m.	∞	Nimb.	N.	5·0	B	0	
„ 9 ...	8 p.m.	∞	Nimb.	N.	3·0	B	0	Slight rain.
„ 10 ...	1 p.m.	5·89	Cu. Str.	N.W.	6·0	0	D	Clouds of dust.
„ 10 ...	3 p.m.	0·59	Nimb.	W.N.W.	6·0	0	0	

NEGATIVE ELECTRICITY—*continued.*

DATE.	HOUR.	AMOUNT.	ZENITH.	WIND.		RAIN.	DUST.	REMARKS.
				Direction.	Force.			
1859.								
JANUARY 12 ...	6 a.m.	0·50	Nimb.	N. by W.	0·5	0	0	Gentle misty rain.
„ 14 ...	10 a.m.	1·69	Cum.	N.E. by E.	0·5	0	0	
„ 14 ...	11 a.m.	0·50	Cir. Cu.	E.N.E.	0·5	0	0	
„ 15 ...	10 a.m.	∞	Veil	N.	4·0	0	0	
„ 15 ...	11 a.m.	0·50	Veil	N.	3·0	0	0	
„ 15 ...	Noon	3·05	Veil	N.E.	4·0	0	0	
„ 15 ...	3 p.m.	0·50	Cu. Str.	N. ½ E.	4·0	0	0	
„ 15 ...	8 p.m.	2·15	Nimb.	N.E.	4·0	B	0	
„ 16 ...	7 a.m.	3·99	Nimb.	N.E.	0·5	0	0	
„ 16 ...	8 a.m.	1·99	Nimb.	N.E.	2·0	0	0	
„ 17 ...	Midnight	∞	Nimb.	S. by W.	4·0	B	0	Thunder and lightning in N.E.; flashes of lightning very bright.
„ 17 ...	7 a.m.	2·73	Nimb.	W. by S.	0·5	0	0	
„ 22 ...	9 a.m.	3·01	Cir. Cu.	N. ½ W.	4·0	0	0	Hot wind.
„ 22 ...	10 a.m.	∞	Cir. Cu.	N. ½ E.	5·0	0	0	
„ 22 ...	11 a.m.	3·50	Cir. Cu.	N.	3·0	0	0	
„ 22 ...	Noon	0·50	Cir. Cu.	N.	5·0	0	0	
„ 22 ...	1 p.m.	0·50	Cir. Cu.	N.	3·0	0	0	
„ 23 ...	5 a.m.	∞	Cir. Cu.	N. ½ E.	7·0	0	0	
„ 23 ...	6 a.m.	0·50	Cir. Cu.	N.	6·0	0	0	
„ 23 ...	8 a.m.	∞	Cu. Str.	S.W.	2·0	0	0	Sparks. Strong gusts of wind.
„ 23 ...	10 a.m.	6·10	Cu. Str.	N.N.E.	4·0	0	0	
„ 23 ...	Noon	∞	Cum.	N.E.	6·0	0	D	Clouds of dust.
„ 23 ...	2 p.m.	∞	Cum.	N.E. ½ E.	6·0	B	0	Thunder clouds.
„ 25 ...	9 a.m.	∞	Cu. Str.	E.N.E.	1·0	B	0	Rain just ceasing.
„ 26 ...	11 a.m.	7·31	Nimb.	N.	6·0	0	0	Heavy shower, coming from N.; thunder in the same direction.
„ 26 ...	2 p.m.	0·50	Nimb.	S.W.	2·0	B	0	
„ 30 ...	2 p.m.	2·05	Nimb.	S.E.	4·0	...	...	Rather squally.
„ 30 ...	4 p.m.	3·05	Cum.	S.E. by S.	5·0	...	...	
„ 30 ...	5 p.m.	6·78	Cum.	S.E. by E.	6·0	0	D	Very dusty.
„ 30 ...	6 p.m.	8·58	Cir. Cum.	S.E. by E.	6·0	0	D	
„ 30 ...	7 p.m.	1·42	Cum. Str.	E. ½ S.	5·0	0	0	
FEBRUARY 3 ...	7 a.m.	3·65	Cirri	N.N.E.	3·0	0	D	Clouds of dust.
„ 3 ...	8 a.m.	∞	Cir. Str.	N. ½ E.	5·0	0	D	Great clouds of dust.
„ 3 ...	9 a.m.	∞	Cir. Str.	N.	7·0	0	0	Hot wind; squally.
„ 3 ...	10 a.m.	5·88	Cir. Str.	N.	6·0	0	0	
„ 3 ...	11 a.m.	0·50	Cir. Str.	N. ½ W.	5·0	0	0	
„ 3 ...	1 p.m.	0·50	Cir. Str.	N. ¼ W.	5·0	0	0	
„ 3 ...	2 p.m.	0·50	Cir. Str.	N.N.E.	5·0	0	0	
„ 3 ...	3 p.m.	3·17	Cir. Str., Veil	N.E.	4·0	0	0	
„ 3 ...	4 p.m.	0·50	Cir. Str.	N.E.	3·0	0	0	
„ 4 ...	11 a.m.	0·50	Cir. Str.	S.	3·0	0	0	
„ 4 ...	1 p.m.	0·50	Cir. Cu.	S.E.	0·5	0	0	
„ 5 ...	10 a.m.	3·00	Fog	S.W. by W.	0·5	0	0	
„ 5 ...	11 a.m.	6·32	Fog	S. ½ E.	1·0	0	0	
„ 5 ...	Noon	0·50	Fog	S.	1·0	0	0	
„ 5 ...	2 p.m.	2·17	Fog	S. ½ W.	1·0	0	0	
„ 6 ...	8 a.m.	6·92	Cirri	N. ½ W.	4·0	0	D	Dust whirling up.
„ 6 ...	9 a.m.	5·42	Clear	N. by W.	6·0	0	0	
„ 6 ...	11 a.m.	∞	Clear	N.N.W.	7·0	0	D	Clouds of dust.
„ 6 ...	Noon	∞	Clear	N.N.W.	8·0	0	0	
„ 6 ...	1 p.m.	∞	Clear	N.W.	7·0	0	0	
„ 6 ...	2 p.m.	∞	Cir. Cum.	N.W.	8·0	0	D	Awful squalls, bringing clouds of dust.
„ 6 ...	3 p.m.	∞	Cir. Cum.	N.W.	8·0	0	0	
„ 6 ...	6 p.m.	0·50	Cir. Str.	N.W. by N.	1·0	0	0	
„ 8 ...	3 p.m.	4·34	Cu. Str.	S. by E.	2·0	0	0	
„ 8 ...	4 p.m.	0·50	Cu. Str.	S.E. by S.	3·0	0	0	
„ 9 ...	4 p.m.	∞	Nimb.	W.	4·0	B	0	Heavy squalls, with rain.

NEGATIVE ELECTRICITY—*continued.*

DATE.	HOUR.	AMOUNT.	ZENITH.	WIND.		RAIN.	DUST.	REMARKS.
				Direction.	Force.			
1859.								
FEBRUARY 9 ...	5 p.m.	0·50	Nimb.	S.W. by S.	4·0	0	0	
„ 9 ...	7 p.m.	∞	Nimb.	S.W.	3·0	B	0	Sparks, heavy shower of rain.
„ 11 ...	9 a.m.	∞	Cu. Str.	N. by E.	5·0	0	0	Hot wind.
„ 11 ...	10 a.m.	1·64	Cu. Str.	N. by E.	5·0	0	D	Quantities of dust.
„ 11 ...	11 a.m.	4·94	Cu. Str.	N. ½ E.	5·0	0	0	
„ 11 ...	Noon	3·28	Cu. Str.	N.	5·0	0	0	Heavy squalls at times.
„ 11 ...	1 p.m.	7·02	Cu. Str.	N. by E.	5·0	0	0	
„ 11 ...	2 p.m.	5·70	Cu. Str.	N.N.E.	5·0	0	0	
„ 11 ...	3 p.m.	∞	Cu. Str.	N. by W.	7·0	0	D	Clouds of dust.
„ 11 ...	4 p.m.	∞	Cu. Str.	N.	7 0	0	0	Force of wind at times 8–9.
„ 11 ...	5 p.m.	∞	Cu. Str.	N.	7·0	0	0	
„ 11 ...	7 p.m.	∞	Nimb.	W.	7·0	0	0	
„ 11 ...	8 p.m.	∞	Nimb.	N. by W.	4·0	0	0	
„ 12 ...	2 p.m.	7·78	Cu. Str.	N. by W.	6·0	0	0	
„ 12 ...	3 p.m.	∞	Nimb.	N. by W.	8 0	0	0	Heavy squalls.
„ 12 ...	4 p.m.	6·50	Nimb.	N.N.W.	7·0	0	0	
„ 12 ...	5 p.m.	6·48	Nimb.	N.W. by N.	6·0	0	0	
„ 17 ...	2 p.m.	3·40	Cum.	S. by W.	4·0	0	0	Heavy clouds in Z.
„ 17 ...	3 p.m.	0·50	Cum.	S.W. by S.	5·0	0	0	Very squally.
„ 19 ...	8 a.m.	8·16	Cir. Cu.	N. ½ E.	5·0	0	0	
„ 19 ...	9 a.m.	∞	Cir. Cu.	N.N.E.	6·0	0	0	
„ 19 ...	10 a.m.	∞	Cir. Cu.	N.N.E.	6·0	0	0	
„ 19 ...	11 a.m.	∞	Cir. Cu.	N. by E.	6·0	0	0	
„ 19 ...	Noon	∞	Clear.	N. by E.	6·0	0	0	
„ 19 ...	1 p.m.	∞	Cir. Str.	N.E. by N.	6·0	0	0	
„ 19 ...	2 p.m.	7·12	Cir. Str.	N.N.E.	5·0	0	0	
„ 19 ...	3 p.m.	4·98	Cir. Str.	N.N.E.	5·0	0	0	
„ 20 ...	9 a.m.	8·52	Cir. Cu.	N.N.E.	5·0	0	D	Hot wind and dust.
„ 20 ...	10 a.m.	∞	Cirri	N.E. by N.	6·0	0	0	
„ 20 ...	11 a.m.	∞	Cirri	N.	5·0	0	0	
„ 20 ...	Noon	∞	Cir. Str.	N. ½ E.	8·0	0	0	
„ 20 ...	1 p.m.	∞	Cu. Str.	N.	6·0	0	0	
„ 20 ...	2 p.m.	∞	Cu. Str.	N.	5·0	0	0	
„ 20 ...	3 p.m.	∞	Cu. Str.	N. ½ E.	6·0	0	0	
„ 20 ...	5 p.m.	3·63	Cu. Str.	N.E. by N.	5·0	0	0	Lightning in N.E.
„ 20 ...	6 p.m.	4·18	Cu. Str.	N.E. by N.	4·0	0	0	
„ 21 ...	3 p.m.	3·07	Cum.	S.W. by S.	7·0	0	0	
„ 22 ...	Noon	5·04	Veil	S.E.	0·5	0	0	Air thick, rainy clouds over whole sky.
„ 22 ...	11 a.m.	4·60	Nimb.	W.	0·0	0	0	
„ 22 ...	4 p.m.	4·64	Cum. Str.	S.	1·0	0	0	
„ 22 ...	5 p.m.	6·00	Cum. Str.	S.S.E.	1·0	0	0	
„ 22 ...	6 p.m.	5·29	Nimb.	E. ½ N.	1·0	0	0	
„ 23 ...	5 p.m.	∞	Nimb.	S.E.	3·0	0	0	Heavy rainy cloud in Z.
„ 24 ...	3 p.m.	2·93	Cu. Str.	S. ½ W.	5·0	0	0	
„ 24 ...	4 p.m.	∞	Cu. Str.	S. ½ W.	8·0	0	0	

98. The foregoing table contains the results of observations and measurements of the electric tension made with Quetelet's electrometer. The greatest care was taken in determining the quality of electricity, to prevent any mistake occurring. Whenever the tension of our atmospheric electricity was too great to admit of measurement the sign " ∞ " was put down, and it may be mentioned here that in most cases of this nature vivid sparks could be obtained from the electrometer.

In the columns headed " Rain" and " Dust" appear the letters B and D respectively, whenever rain was falling or dust floating in the air during the time of exposure of the instrument. With respect to the latter it may be under-stood, that whenever use is made of the letter D, the neighborhood of the Observatory was enveloped in dust, as is frequently the case during hot winds.

XIII.—GENERAL REPORT ON THE METEOROLOGY OF THE COLONY OF VICTORIA.

99. When, in the month of March last, the Meteorological Observatory, hitherto in operation at the Crown Lands Offices, ceased to exist, and to me were entrusted the labors of that institution, in addition to my own at the Magnetic Observatory, I formed at once the resolution of carrying into effect an extended system of five-day means.

This is not the place to discuss the high importance of such a system, or its influence on the advancement of meteorology; or to argue that it is almost the only means sure to lead to results which will give us a clue towards the formation of tenable theories, on the leading questions in this science. I will only state that after mature consideration I determined to extend the organization of five-day means to all the country observatories; and further, I undertook the task of applying that system retrospectively to the observations made at the different meteorological stations, during the twelve months, from March, 1858, to March, 1859, before the latter were placed under my direction.

The meteorological journals kept in accordance with the regulations issued by the late director of meteorological observations had no reference to the system above referred to, and required in consequence a thorough examination and reduction for this purpose.

100. On receiving the meteorological registers of the various stations in the month of June last, I found the reductions carried out only as far as they were required for the method of comparison then in use, and consequently, the single readings had to be grouped into periods of five days, the means to be taken, and the corrections to be applied. It is hardly necessary to state, that an immense amount of labor was required to do justice to so difficult a task. But a glance at the tables thus compiled, will show the great advantage of this method of comparing meteorological facts over any other, and will certainly illustrate the value of the work accomplished.

101. The different stations which have supplied observations included in this report, together with the names of those gentlemen who kindly undertook them, are given in the following table:—

	NAME OF THE STATION.	HEIGHT ABOVE THE SEA.	OBSERVERS.
		Feet.	
1	Ararat	...	G. Langford, Esq., Surveyor.
2	Ballaarat	1437·0	J. H. Taylor, Esq., District Surveyor.
3	Beechworth	1750·0	H. Wackerow, Esq., Assistant Surveyor.
4	Camperdown	...	R. D. Scott, Esq., District Surveyor.
5	Castlemaine	942·0	Th. Adair, Esq., District Surveyor.
6	Flagstaff Observatory ...	120·7	Observatory staff.
7	Geelong	96·0	A. J. Skeene, Esq., District Surveyor. A. M. Mason, Esq., Assistant Surveyor.
8	Heathcote	789 0	Th. Chauncey, Esq., District Surveyor.
9	Koojoora	...	F. Beyerly, Esq., District Surveyor.
10	Mount Warreneep ...	...	W. H. Surplice, Esq., Surveyor.
11	Portland	36·0	Lindsay Clarke, Esq., Surveyor.
12	Port Albert	7·0	J. Ferris, Esq. (private).
13	Sandhurst	778·5	R. W. Larritt, Esq., District Surveyor.
14	Tyntyndyer	...	T. Beveridge, Esq. (private).
15	Welshpool	...	Captain Townshend, R.N.
16	Yan Yean	...	Ch. Taylor, Esq., Engineer.

102. The principles, according to which the reductions have been carried out, are the same with reference to the country stations, as have been stated when speaking of the reductions applied to the observations made at the Flagstaff Observatory, and do not require any further explanation here.

103. With regard to the calculations of the means I have to add a few words only. First it must be stated, that the registrations have been made at the following times in all the country observatories, viz. :—

At $9^{h.}$ $30^{m.}$ a.m.; $3^{h.}$ $30^{m.}$ p.m.; $9^{h.}$ $30^{m.}$ p.m.

Besides the direct observations on temperature taken at the above named hours, maximum and minimum self-registering thermometers, have been at the disposal of the several observers ; and to arrive at the mean temperature of the day, the extremes recorded by these instruments have been taken in conjunction with the readings at $9^{h.}$ $30^{m.}$ a.m. and at $9^{h.}$ $30^{m.}$ p.m., by which the mean value for the five days has been brought as near truth as is required.

The mean temperature of evaporation was ascertained in a similar manner, and from these *data* the relative humidity has been calculated according to the principles laid down in the introduction to the meteorological part of this report.

104. The mean pressure of air for five days was obtained by taking the means of all registrations made at the above stated hours ; it is evident that the value obtained must be somewhat too high ; however, this inaccuracy was neglected as the excess will probably be always within the limits of the correction of the instruments, and can never seriously interfere with the object in view.

105. The first series of tables contains the five-day means in Temperature of Air, Pressure of Air, Relative Humidity, Amount of Cloud, and Amount of Rain for their respective five days.

Only those of the meteorological stations appear in these tables which have made a complete set of observations, and these have been classified according to their heights above the level of the sea, commencing with the lowest elevation.

Six periods form a month with the exception of June, which contains seven periods as stated in the "Introduction."

106. The figures given in the columns for Melbourne represent the means of hourly observations, as taken at the Flagstaff Observatory, and consequently are derived from one hundred and twenty single readings.

107, 108. FIVE-DAY MEANS FOR THE MONTHS OF MARCH AND APRIL, 1858.

	STATIONS.	MARCH.						APRIL.					
		2nd to 6th	7th to 11th	12th to 16th	17th to 21st	22d to 26th	27th to 31st	1st to 5th	6th to 10th	11th to 15th	16th to 20th	21st to 25th	26th to 30th
Temperature of Air.	Port Albert ...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	62·7	63·4	69·0	58·5	59·2	61·6	57·6	57·5	57·1	59·2	55·0	56·4
	Geelong ...	64·2	64·8	73·7	59·3	60·7	61·9	60·4	57·2	58·0	58·6	57·9	55·6
	Melbourne ...	66·1	66·4	74·8	62·6	61·5	61·9	62·1	57·9	58 4	58·8	57·7	57·0
	Camperdown	64·6	63·9	72·4	57·7	60·1	59·0	57·1	53·6	54·8	58·0	54·6	54·8
	Sandhurst ...	76·1	73·3	75·9	63·8	61·3	63·2	62·5	56·9	58·5	60·8	59·3	58·2
	Heathcote ...	73·0	71·4	75·8	64·1	62·0	62·9	61·5	57·1	...	62·2	57·5	...
	Castlemaine...	...	73·0	75·3	...	...	...	59·9	56·1	58·1	60·9	...	58·1
	Ballaarat ...	69·2	67·0	73·4	57·0	57·8	60·5	55·5	52·3	54·2	57 4	54·7	54·9
	Beechworth ...	75·9	72·9	72·9	67·5	62·4	67·1	67·2	56·8	59·8	63·6	57·9	55·5
Pressure of Air.	Port Albert ...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	30·093	29·904	30·080	29·998	29·993	30·073	30·075	30·080	30·160	30·313	30·106	30·109
	Geelong ...	30·048	29·870	30·082	29·935	29·952	30·055	29·984	29·951	30 104	30·258	30·040	30·077
	Melbourne ...	30·020	29·809	30·063	29·862	29·911	30·010	29·949	29·911	30·054	30·240	30·011	30·039
	Camperdown	...	...	...	...	...	...	...	...	...	...	...	...
	Sandhurst ...	29·394	29·256	29·447	29·247	29·269	29·372	29 349	29·311	29 462	29·566	29·387	29·437
	Heathcote ...	29·299	29·101	29·401	29·180	29·218	29·327	29·274	29·242	...	29·425	29·234	...
	Castlemaine...	...	28·909	29·246	...	...	...	29·053	29 005	29·143	29·309	...	29·123
	Ballaarat ...	28·649	28·557	28·712	28·526	28·535	28·642	28·594	28·529	28·663	28·829	28·615	28·659
	Beechworth ...	28·262	28·042	28·387	28·102	28·249	28·228	28·167	28·158	28 283	28·440	28·242	28·284
Relative Humidity.	Port Albert ...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	0·699	0·653	0·750	0·672	0·748	0 726	0·769	0 687	0·699	0·728	0·781	0 814
	Geelong ...	0·701	0·642	0·580	0·712	0·737	0·684	0·646	0 859	0·772	0·705	0·686	0·779
	Melbourne ...	0·769	0·698	0·553	0·689	0·780	0·737	0·673	0·772	0·680	0·746	0·774	0·838
	Camperdown	...	...	...	...	...	...	...	...	...	...	...	...
	Sandhurst ...	0·426	0·455	0·518	0·549	0·706	0·644	0·586	0·731	0·842	0·729	0·719	0·693
	Heathcote ...	0·527	0·499	0·482	0·584	0·696	0·676	0·574	0·701	...	0·735	0·913	...
	Castlemaine...	...	0·511	0·508	...	...	...	0·571	0·667	0·594	...	...	0·680
	Ballaarat ...	0·561	0·607	0·562	0·744	0·780	0·732	0 802	0·810	0·714	0·621	0·682	0·753
	Beechworth ...	0·462	0·493	0·465	0·439	0·595	0·506	0·492	0·552	0·503	0·498	0·546	0·540
Amount of Rain.	Port Albert ...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	0·000	0·000	0·440	0·610	0·100	0·160	0 100	0·290	0 010	0·000	0·400	0·080
	Geelong ...	0·000	0·000	0·000	0·050	0·670	0·000	0·000	0·000	0·000	0·000	0·040	0·450
	Melbourne ...	...	...	...	...	...	...	0·023	0·069	0·003	0·009	0·045	0·392
	Camperdown	0·020	0·020	0·010	0·165	0·055	0·020	0·075	0·440	0·060	0·020	0·290	0·360
	Sandhurst ...	0·000	0·000	0·000	0·000	2·300	0·000	0·000	0 000	0·000	0·000	0·000	2·400
	Heathcote ...	0·000	0·000	0·000	0·000	2·175	0·037	0·000	0·000	0·040	0·000	0·295	1·522
	Castlemaine...	0·020	0 000	0·000	0·000	1·120	0·000	0·000	0·000	0·020	0·000	0·110	0·480
	Ballaarat ...	0·000	0·020	0·000	0·070	0·370	0·000	0·020	0·310	0·020	0·000	0·020	0·650
	Beechworth ...	0·060	0·030	0·100	0·590	0·000	0·000	0·070	0·000	0·000	0·000	0·550	1·230
Amount of Cloud.	Port Albert ...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	2·8	6·7	6·9	6·1	5·4	4·6	8 9	7·9	4·2	3·6	5·4	6·1
	Geelong ...	3·0	6·3	4·3	5·5	5·7	3·8	7·5	8·3	6·2	4·3	4·5	5·5
	Melbourne ...	3·8	5·4	3·3	6·9	5·5	3·7	7·1	8·1	5·5	3 7	5·2	6·6
	Camperdown	1·6	6·7	4·5	2·2	2·3	1·8	8 3	9·1	5·3	3·5	5 8	7·4
	Sandhurst ...	0·0	1·9	3·0	3·7	3·9	3·7	1·9	5·3	1·2	0·5	3 4	3·3
	Heathcote ...	0·8	3·1	3·8	3·9	5·1	2·1	2·5	7·1	2·4	1 3	4 9	4·1
	Castlemaine...	...	2·8	2·9	...	...	...	4·0	4·3	3·1	2·4	...	3·3
	Ballaarat ...	1·1	3·6	3·3	5·2	5·1	4·0	5·5	8·2	3·9	1·7	3·2	7·0
	Beechworth ...	2·1	3·9	3·3	3·6	4·8	0·7	0·4	4·8	3·3	2·4	5·7	4·3

109, 110. FIVE-DAY MEANS FOR THE MONTHS OF MAY AND JUNE, 1858.

	STATIONS.	MAY.						JUNE.						
		1st to 5th	6th to 10th	11th to 15th	16th to 20th	21st to 25th	26th to 30th	31st to 4th	5th to 9th	10th to 14th	15th to 19th	20th to 24th	25th to 29th	30th to 4th
Temperature of Air.	Port Albert	...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	60·7	56·1	56·4	51·7	51·2	54·2	51·9	50·7	51·9	50·7	50·4	52·1	47·4
	Geelong ...	58·1	57·1	54·8	52·8	50·4	51·8	50·6	47·1	50·4	48·9	48·1	47·2	42·5
	Melbourne	58·5	57·5	55·1	53·2	49·2	51·6	49·3	48·4	50·3	47·0	48·4	49·8	42·1
	Camperdown	55·9	53·3	51·4	48·2	48·7	49·0	46·9	45·5	48·0	45·6	46·3	46·7	41·6
	Sandhurst	56·9	54·7	52·0	49·5	49·0	52·0	47·5	44·9	48·2	45·1	44·3	45·5	42·9
	Heathcote...	56·7	53·4	51·7	49·9	46·8	50·1	45·9	42·6	47·4	44·5	43·3	46·0	39·1
	Castlemaine	55·4	49·8	51·4	...	...	51·1	47·4	...	...	...	...	44·5	37·6
	Ballaarat ...	54·9	51·1	49·1	46·8	46·1	47·9	45·4	43·5	46·0	44·2	43·4	44·4	38·6
	Beechworth	57·4	53·2	50·1	49·2	47·0	47·0	44·0	44·3	45·3	44·7	44·4	44·3	41·4
Pressure of Air.	Port Albert	...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland	30·161	29·946	29·701	29·919	30·266	29·895	29·931	29·974	30·331	29·952	30·049	30·172	30·219
	Geelong ...	30·165	29·942	29·679	29·893	30·208	29·878	29·937	29·989	30·249	30·009	30·015	30·129	30·173
	Melbourne	30·173	29·918	29·650	29·822	30·206	29·817	29·892	29·976	30·230	29·986	29·965	30·101	30·135
	Camperdown	...	...	...	...	...	...	...	...	...	...	...	...	...
	Sandhurst	29·546	29·321	...	29·230	29·451	29·093	29·182	29·290	29·523	29·339	29·368	29·419	29·406
	Heathcote...	29·480	29·252	28·995	29·162	29·487	29·135	29·223	29·335	29·537	29·291	29·316	29·424	29·438
	Castlemaine	29·216	29·006	28·778	...	...	28·849	29·001	...	...	...	...	29·173	29·185
	Ballaarat ...	28·757	28·536	28·273	28·464	28·786	28·426	28·513	28·568	28·841	28·546	28·597	28·706	28·715
	Beechworth	28·419	28·190	27·959	28·081	28·383	28·049	28·155	28·263	28·436	28·246	28·231	28·333	28·304
Relative Humidity.	Port Albert	...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	0·686	0·771	0·743	0·733	0·815	0·831	0·812	0·727	0·856	0·710	0·816	0·704	0·740
	Geelong ...	0·721	0·746	0·754	0·816	0·795	0·831	0·751	0·814	0·864	0·744	0·800	0·870	0·835
	Melbourne	0·782	0·826	0·834	0·783	0·927	0·938	0·897	0·796	0·909	0·836	0·921	0·895	0·943
	Camperdown	...	...	...	...	...	...	...	...	...	...	...	...	...
	Sandhurst	0·783	0·775	0·811	0·729	0·691	0·755	0·807	0·801	0·847	0·786	0·847	0·905	0·728
	Heathcote...	0·824	0·849	0·864	0·767	0·787	0·851	0·866	0·937	0·842	0·818	0·896	0·902	0·751
	Castlemaine	0·762	0·951	0·838	...	...	...	0·865	...	...	...	...	0·894	0·736
	Ballaarat ...	0·755	0·851	0·854	0·784	0·802	0·876	0·833	0·775	0·890	0·743	0·650	0·882	0·766
	Beechworth	0·526	0·696	0·759	0·666	0·648	0·799	0·792	0·703	0·756	0·700	0·790	0·820	0·614
Amount of Rain.	Port Albert	...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	0·000	0·760	0·260	0·320	0·420	0·330	0·320	1·000	0·190	0·100	0·340	1·340	0·280
	Geelong ...	0·030	0·490	0·240	0·120	0·020	0·440	0·150	0·100	0·380	0·050	0·030	0·180	0·240
	Melbourne	0·000	0·450	0·230	0·182	0·025	0·362	0·016	0·042	0·068	0·000	0·082	0·068	0·411
	Camperdown	0·082	0·560	1·260	0·360	0·060	0·425	0·290	0·920	0·290	0·030	0·200	0·155	0·255
	Sandhurst	0·180	0·290	1·020	0·000	0·000	0·170	0·080	0·590	0·070	0·000	0·620	0·480	0·000
	Heathcote...	0·075	0·480	0·796	0·005	0·000	0·120	0·045	0·605	0·020	0·000	0·480	0·445	0·000
	Castlemaine	0·220	1·450	0·890	0·000	0·000	0·390	0·010	0·480	0·100	0·000	0·460	0·470	0·000
	Ballaarat ...	0·000	1·080	1·480	0·100	0·000	0·450	0·150	0·430	0·250	0·000	0·220	0·240	0·100
	Beechworth	0·110	0·970	1·310	0·070	0·000	0·260	0·760	0·660	0·050	0·000	0·700	0·880	0·000
Amount of Cloud.	Port Albert	...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	4·3	8·1	5·9	6·3	7·0	6·4	6·1	5·5	5·3	4·7	5·9	9·3	4·9
	Geelong ...	5·3	5·5	6·7	6·0	5·7	6·5	5·1	5·8	5·5	3·7	4·7	8·1	5·0
	Melbourne	4·9	5·3	6·7	5·5	7·1	7·3	5·2	4·4	5·5	3·3	5·8	8·1	5·7
	Camperdown	5·1	4·7	7·2	4·8	7·6	7·2	5·7	5·7	6·0	5·6	5·4	7·9	4·0
	Sandhurst	2·7	3·3	4·9	1·7	1·7	5·8	4·8	3·7	1·9	2·9	3·3	6·8	0·8
	Heathcote...	4·8	5·0	7·1	4·7	3·8	7·8	5·6	4·9	2·9	4·6	5·2	8·3	0·9
	Castlemaine	3·2	3·2	4·3	...	...	...	4·0	4·4	3·5	3·2	4·1	4·7	1·4
	Ballaarat ..	4·3	6·0	6·7	5·3	5·9	7·0	4·0	5·4	6·6	4·3	5·7	9·1	4·2
	Beechworth	5·7	2·2	4·0	2·0	2·1	9·1	5·4	4·7	2·9	4·1	5·1	8·2	0·9

111, 112. FIVE-DAY MEANS FOR THE MONTHS OF JULY AND AUGUST, 1858.

	STATIONS.	JULY.						AUGUST.					
		5th to 9th	10th to 14th	15th to 19th	20th to 24th	25th to 29th	30th to 3rd	4th to 8th	9th to 13th	14th to 18th	19th to 23rd	24th to 28th	29th to 2nd
Temperature of Air.	Port Albert ...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	48·1	50·1	48·8	50·6	...	...	...	...	...	...	...	...
	Geelong ...	48·2	46·4	49·1	50·0	47·0	47·1	49·3	49·7	49·3	51·0	52·2	49·9
	Melbourne ...	47·7	46·8	48·3	49·3	47·8	47·2	49·2	50·4	49·6	52·0	52 1	51·8
	Camperdown	44·4	45·3	44·7	45·6	43·7	44·4	46·1	45·8	45·8	46·1	47·9	47·0
	Sandhurst ...	43·8	42·6	45·0	44·1	43·5	43·8	47·6	47·0	46·6	46·7	48·7	48·9
	Heathcote ...	42·6	42·6	44·4	45·0	43·4	42·2	47·2	47·3	47·3	48·4	49·4	48·9
	Castlemaine...	43·1	41·4	41·7	43·7	42·0	40·9	47·2	47·6	49 2	48 5	46·7	46·1
	Ballaarat ...	42·8	41·7	42·7	43·1	42·3	41·5	44·0	43·7	44·2	45·8	47·7	45·1
	Beechworth ...	39·9	39·1	40·9	43·5	40·2	40·9	43·9	43·2	46·3	43·9	48·2	46·7
Pressure of Air.	Port Albert ...	...	...	30·020	29·929	30·077	30·056	29·920	29·648	30·055	29·767	29·999	29·801
	Portland ...	30·050	29·893	30·072	29·910	30·130	30·035	29·839	29·804	30·064	29·712	29 863	29·834
	Geelong ...	30·007	29·855	29·991	29·898	30·041	30·000	29·865	29·698	29·998	29·736	29·917	29·782
	Melbourne ...	29·960	29·828	29·954	29·865	29·991	29·976	29·807	29·627	29·968	29·700	29·882	29·743
	Camperdown	...	...	...	...	...	...	...	...	...	...	...	...
	Sandhurst ...	29·283	29·146	29·260	29·271	29·295	29·269	29·126	28·947	29·241	29·024	29·188	29·092
	Heathcote ...	29.293	29·132	29·320	29·229	29·309	29·287	29·140	28·940	29·270	29·084	29 227	29·112
	Castlemaine...	29 084	28·925	29·086	29·023	29·077	29·058	28·912	28·989	29·121	28 923	29·014	28·901
	Ballaarat ...	28·568	28·412	28·599	28·482	28·600	28·566	28·421	28·378	28·578	28 336	28·493	28 394
	Beechworth ...	28·212	28·105	28·251	28·178	28·198	28·220	28·090	27·865	28·147	28·081	28·160	28 052
Relative Humidity.	Port Albert ...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	0·813	0·776	0·814	0·852	...	...	...	...	...	...	...	...
	Geelong ...	0·790	0·786	0·763	0·737	0·807	0·810	0·823	0 810	0·844	0·705	0·867	0·750
	Melbourne ...	0·892	0·914	0·862	0·841	0·866	0·899	0·875	0 869	0·895	0·732	0·666	0·785
	Camperdown	...	...	...	...	...	...	...	...	...	...	...	...
	Sandhurst ...	0·790	0·913	0·806	0·867	0·795	0·803	0·784	0·791	0·753	0·800	0·873	0·750
	Heathcote ...	0·794	0·937	0·860	0·905	0·820	0·805	0·810	0·800	0·753	0·760	0·583	0·802
	Castlemaine...	0·760	0·934	0·914	0·897	0·860	0·893	0·810	0·765	0·716	0·772	0·780	0·596
	Ballaarat ...	0·860	0·920	0·867	0·852	0·792	0 832	0·834	0·871	0·860	0·730	0·572	0·795
	Beechworth ...	0·780	0·828	0·825	0·818	0·765	0·770	0·781	0·846	0·710	0·781	0·627	0·745
Amount of Rain.	Port Albert ...	...	2·100	0·550	0·750	0·685	0·000	0·030	1·390	0·260	0 680	0·300	0·450
	Portland ...	0·710	0·530	1·270	1·170	1·300	0·410	0·730	0·390	0·020	0·900	0·300	1·300
	Geelong ...	0·360	0·820	0·160	0·480	0·470	0·000	0·000	0·350	0·380	0·650	0 030	0·500
	Melbourne ...	0·402	0·624	0·086	0·158	0·539	0·061	0·025	0·575	0·357	0·048	0·042	0·410
	Camperdown	0·370	0·700	0·780	0·980	0·900	0·310	0·465	0·710	1·150	1·170	0·335	1·070
	Sandhurst ...	0·100	0·710	0·160	1·130	0·760	0·460	0·000	1·000	0·000	0·770	0·000	0·000
	Heathcote ...	0·040	0·363	0·110	0·795	0·465	0·485	0·000	0·990	0·000	0·610	0 070	0·415
	Castlemaine...	0·100	0·540	0·220	0·660	0·510	0·310	0·060	0·290	0·290	0·190	0·040	0·430
	Ballaarat ...	0·200	0·600	0·310	0·640	0·550	0·240	0·120	0·570	0·240	0·370	0 220	0·780
	Beechworth ...	0·230	0·520	0·470	2·290	0·490	0·250	0·390	2·200	0·020	1·270	0·360	0·630
Amount of Cloud.	Port Albert ...	...	5·0	3·8	4·3	5·0	4·2	2·4	8·2	3·0	4·2	3 4	2·5
	Portland ...	5·0	6·8	7·2	6·6	6·8	7·2	5·0	8·4	7·2	5·6	5·4	7·4
	Geelong ...	5·6	6·1	4·8	5·7	8·0	4·7	4·8	8·6	7·0	4·2	2·6	6·6
	Melbourne ...	6·0	7·4	5·0	5·7	7·5	7·3	5·4	9·4	7·1	6 5	3·4	7·3
	Camperdown	5·3	7·6	7·2	6·3	7·8	6·4	6·1	8·1	6·9	5·5	4 8	7·3
	Sandhurst ...	5·2	7·7	5·7	6·3	6·1	5·4	3·0	6·1	3·5	4·2	0·8	4·7
	Heathcote ...	5·6	9·2	5·8	7·2	6 8	5·2	4·6	6·7	6·0	5·2	1·5	5·7
	Castlemaine...	3·5	3·7	2·3	6·1	3·7	2·3	3·0	4·3	3·2	2·6	1·0	6·2
	Ballaarat ...	7·8	8·5	7·3	7·9	8·2	6·7	5·7	8·9	7·8	5·4	1·9	7·1
	Beechworth ...	5·9	9·1	7·7	7·3	5·1	5·9	4·3	8·6	3·8	6·3	3·4	6·1

113, 114. FIVE-DAY MEANS FOR THE MONTHS OF SEPTEMBER AND OCTOBER, 1858.

	STATIONS.	SEPTEMBER.						OCTOBER.					
		3rd to 7th.	8th to 12th.	13th to 17th	18th to 22d.	23rd to 27th	28th to 2d.	3rd to 7th.	8th to 12th.	13th to 17th	18th to 22d.	23d to 27th.	28th to 1st.
Temperature of Air.	Port Albert ...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	...	...	...	...	...	...	...	...	...	...	...	...
	Geelong ...	49·6	49·2	50·5	55·7	50·9	49·8	59·2	55·5	59·9	52·9	59·6	55·0
	Melbourne ...	50·3	49·5	50·8	56·6	51·5	50 6	60·1	56·6	60·7	52·7	60·7	56·0
	Camperdown	47·2	45·7	45·8	52·9	46·4	46·7	60·1	52·7	54·7	56·2	58 1	53·6
	Sandhurst ...	49·0	49·8	...	...	49·4	51·2	63·0	59·0	65·2	53·6	66·4	61·1
	Heathcote ...	49·0	48·9	48·4	55·8	49·3	49·3	63·1	56·8	61·5	51·8	64·7	58·2
	Castlemaine...	47·6	44·7	45·6	52·4	48·1	47·5	58·4	54·4	57·9	49·6	63·5	58·1
	Ballaarat ...	44·4	43·9	44·4	52·2	45·2	45·8	60·6	53·4	56·7	48·0	60·2	53·6
	Beechworth ...	43·9	46·3	45·7	51·9	45·1	50·2	61·0	57·7	60·8	49·3	64·6	60·1
Pressure of Air.	Port Albert ...	29·779	29·876	29·832	29·772	29·770	30·122	30·257	29·984	29·909	30·019	30·198	29·934
	Portland ...	29·863	29,901	29·790	29·742	29·855	30·152	30·158	30·001	29·844	30·009	30·122	29·952
	Geelong ...	29·789	29·866	29·772	29·739	29·782	30·076	30·123	29·943	29·833	29·951	30·072	29·882
	Melbourne ...	29·705	29·806	29·749	29·716	29·716	30·026	30·113	29·880	29·806	29·911	30·074	29·841
	Camperdown	...	...	...	...	...	...	...	...	...	...	...	...
	Sandhurst ...	28·983	29·125	29·074	29·027	29·085	29·308	29·356	29·165	29·155	29 257	29·302	29·087
	Heathcote ...	29·000	29·136	29·111	29·056	29·107	29·340	29·416	29·186	29·161	29·252	29·361	29·132
	Castlemaine...	28·781	28·876	28·872	28·834	28·851	29·112	29 202	28·970	28·981	29·019	29·136	28·914
	Ballaarat ...	28·281	28·430	28·381	28·330	28·384	28·642	28·717	28 494	28·445	28·545	28·663	28·454
	Beechworth ...	27·898	28·090	28·075	28·011	28·027	28·226	28·340	28·106	28·074	28·156	28·320	28·046
Relative Humidity.	Port Albert ...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	...	...	...	...	...	...	...	...	...	...	...	...
	Geelong ...	0·731	0·710	0·702	0·716	0·740	0·727	0·685	0·672	0·598	0·600	0·563	0·670
	Melbourne ...	0·851	0·811	0·756	0·677	0·783	0·822	0·722	0·776	0·617	0·693	0 772	0 839
	Camperdown	...	...	...	...	...	...	...	...	...	...	...	...
	Sandhurst ...	0·717	0·665	...	...	0·744	0·603	0·553	0·564	0·395	0·460	0·496	0·573
	Heathcote ...	0·768	0·730	0·763	0·678	0·775	0·767	0·619	0·724	0·565	0·636	0·589	0·648
	Castlemaine...	0·832	0·750	0·810	0·733	0·785	0·812	0·774	0·669	0·632	0·738	0·602	0·623
	Ballaarat ...	0·796	0·752	0·760	0·630	0·790	0·760	0·557	0·678	0·524	0·594	0·504	0·640
	Beechworth ...	0·846	0·643	0·702	0·702	0·770	0·662	0·649	0·685	0·541	0·643	0·530	0·621
Amount of Rain.	Port Albert ...	0·210	0·710	0·670	0·270	0 760	0·220	0·000	0·580	0·270	0·190	0·140	0·010
	Portland ...	0·390	0·350	1·070	0·240	1·050	0·460	0·000	0·070	0·310	0·600	0·000	0·000
	Geelong ...	0·130	0·370	0·800	0·060	0·730	0·210	0·000	0·000	0·110	0·300	0·000	0·000
	Melbourne ...	0·365	0·651	0·234	0·141	0·331	0·238	0·000	0·050	0·164	0·482	0·033	0·055
	Camperdown	0·310	0·940	0·775	0·220	1·590	0·570	0·040	0·055	0·505	0·610	0·035	0·025
	Sandhurst ...	0·150	0·180	0·220	0·420	0·510	0·000	0·000	0·000	0·000	0·000	0·000	0·140
	Heathcote ...	0·255	0·290	0·350	0·320	0·810	0·030	0·000	0·020	0·025	0·070	0·035	0·130
	Castlemaine...	0·260	0·230	0·240	0·350	0·650	0·000	0·000	0·000	0·100	0·000	0·000	0·110
	Ballaarat ...	0·450	0·790	0·430	0·300	1·150	0·140	0·000	0·200	0·170	0·260	0·010	0·110
	Beechworth ...	1·020	0·460	0·370	0·310	0·850	0·160	0·030	0·530	0·120	0·590	0·000	0·380
Amount of Cloud.	Port Albert ...	7·8	5·2	3·0	6·2	6·4	4·4	1·4	6·2	4·4	5·2	6·8	7·4
	Portland ...	7·6	6·4	7·0	7·0	8·0	5·2	2·5	6·3	6·5	5·3	4·3	8·7
	Geelong ...	7·3	6·5	5·1	5·4	6·4	5·3	1·2	7·4	5·2	5·9	4·9	8·1
	Melbourne ...	7·5	7·0	5·7	6·7	7·8	5·5	1·5	7·2	4·7	6·9	5·8	8·3
	Camperdown	6·5	6·3	6·1	7·1	8·4	6·1	1·9	7·2	5·6	6·5	5·6	7·4
	Sandhurst ...	4·6	3·6	2·1	4·0	6·3	2·5	0·4	3·7	2·0	2·3	5·0	4·9
	Heathcote ...	5·4	5·3	4·5	5·1	7·3	4·3	1·9	3·9	4·5	4·7	5·3	5·6
	Castlemaine...	5·5	3·4	4·6	4·3	6·2	2·9	0·4	3·7	2·1	2·9	2·9	2·8
	Ballaarat ...	8·1	7·0	7·2	6·3	9·2	6·6	1·5	7·0	4·7	5·1	3·8	7·7
	Beechworth ...	7·5	7·1	5·1	6·8	7·3	2·8	3·3	3 2	3·7	4·1	4 1	4·7

115, 116. FIVE-DAY MEANS FOR THE MONTHS OF NOVEMBER AND DECEMBER, 1858.

	STATIONS.	NOVEMBER.						DECEMBER.					
		2nd to 6th	7th to 11th	12th to 16th	17th to 21st	22d to 26th	27th to 1st	2nd to 6th	7th to 11th	12th to 16th	17th to 21st	22d to 26th	27th to 31st
Temperature of Air.	Port Albert ...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	...	...	...	...	...	...	...	...	...	...	...	...
	Geelong ...	55·7	59·8	58·0	64·6	65·0	63·9	63·3	56·7	64·3	57·1	62 1	66·3
	Melbourne ...	57·0	59·7	61·4	66·4	67·4	66 5	65·8	57·7	65 6	58·2	66·4	67·1
	Camperdown	55·5	56·4	57·5	61·5	63·5	62·7	58·7	54·8	65·4	...	64·4	66·0
	Sandhurst ...	63·9	62·0	67·1	70 3	...	67·7	70·0	61·3	71·3	...	71·8	72 1
	Heathcote ...	62·1	60·8	66·5	70·3	72·3	65·9	69·9	60·0	70·1	58·8	70·4	71·3
	Castlemaine...	59·4	57·9	63·2	66·9	70·0	66 2	66·6	55·7	67·6	57·2	69·2	66 4
	Ballaarat ...	57·4	56·3	60·5	65·1	66·3	62·4	63·3	54·3	64·9	53·0	65·3	65·7
	Beechworth ...	62·3	62·4	64·6	68·1	72·4	63·7	72·3	62·7	71·6	57·6	69·2	68·6
Pressure of Air.	Port Albert ...	30·024	30·059	29·901	29·933	30·060	29·798	29·852	29·948	29·844	29·540	29·829	30·110
	Portland ...	30·012	30·067	29·861	29·904	30·060	29·714	29·865	29 959	29·789	29·618	29 754	30·025
	Geelong ...	29·959	29·991	29·822	29·878	30 002	29·709	29·816	29·885	29·766	29·530	29·719	30·014
	Melbourne ...	29·899	29·932	29·750	29·811	29·945	29·662	29·756	29·842	29·694	29·480	29·688	29·951
	Camperdown	...	...	...	...	...	...	...	...	...	...	...	...
	Sandhurst ...	29·146	29·218	29·009	29·110	29·227	29·036	29·058	29·097	28·974	28·952	28·940	29·248
	Heathcote ...	29·205	29·252	29·046	29·151	29 256	29·009	29·090	29·131	29·003	28·816	28·980	29·287
	Castlemaine...	28·999	29·038	28·834	28·967	29·073	28·794	28·908	28·912	28·808	28·600	28·779	29·093
	Ballaarat ...	28·515	28·574	28·383	28·465	28·580	28·312	28·420	28·458	28·344	28·139	28·322	28·610
	Beechworth ...	28·134	28·167	28·007	28·123	28·206	27·978	28·059	28·024	28·002	27·770	27·964	28·293
Relative Humidity.	Port Albert ...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	...	...	...	...	...	...	...	...	...	...	...	...
	Geelong ...	0·623	0·589	0·774	0·604	0·520	0·738	0·667	0·660	0·630	0·732	0·700	0·677
	Melbourne ...	0·718	0·714	0·856	0·597	0·589	0·771	0·584	0·698	0·696	0·836	0·748	0·647
	Camperdown	...	...	...	...	...	...	...	...	...	...	...	...
	Sandhurst ...	0·427	0·538	...	0·367	...	0·634	0·510	...	0·432	...	0·542	0·317
	Heathcote ...	0·580	0·610	0·633	0·426	0·381	0·716	0·588	0·556	0·552	0·742	0·722	0·551
	Castlemaine...	0·636	0·624	0·700	0·541	0·511	0·681	0·565	0·613	0·575	0·741	0·749	0·600
	Ballaarat ...	0·511	0·586	0·675	0·436	0·409	0·715	0·504	0·580	0·540	0·750	0·661	0·500
	Beechworth ...	0·511	0·563	0·647	0·478	0·430	0·686	0·478	0·470	0·587	0·671	0·576	0·544
Amount of Rain.	Port Albert ...	0·250	0·130	2·280	0·100	0·100	0·620	0·010	0·010	0·010	1·380	0·130	0·470
	Portland ...	0·120	0·070	0·060	0·120	0·000	0·950	0·070	0·040	0·000	1·330	0·110	0·420
	Geelong ...	0·050	0 000	0·000	0·000	0·120	1·200	0·310	0·130	0·120	2·140	0·550	0·250
	Melbourne ...	0·191	0·403	0·761	0·017	0·064	1·445	0·064	1 057	1·281	3·655	0·150	0·360
	Camperdown	0·315	0·145	0·165	0·135	0·075	0·965	0·058	0 150	0·017	1·648	0·145	0·287
	Sandhurst ...	0·160	0·410	0·240	0·000	0 000	1 080	0·000	0·000	0·300	2·050	1·780	0·000
	Heathcote ...	0·120	0·230	0·060	0·000	0·000	1·970	0·350	0·000	0·490	2·120	0·300	0 010
	Castlemaine...	0·290	0·000	0·650	0·000	0 020	0·740	0 090	0·000	0·740	1·610	0·500	0·520
	Ballaarat ...	0·140	0·110	0·740	0·020	0·030	1·030	0·030	0·000	1·350	2 040	0·710	0·430
	Beechworth ...	0·240	1·020	0·660	0·000	0·000	1·080	0·030	0·020	1 230	1·290	0·650	0·000
Amount of Cloud.	Port Albert ...	3·5	4·7	8·3	5·1	4·1	6·0	4·1	6·1	4·5	6·7	6·3	1·5
	Portland ...	4·6	5·4	7·0	3·8	6 8	5·4	3·6	5·3	3·8	8·2	6·4	2·9
	Geelong ...	4·8	4·6	5·4	5·8	5·2	7·6	3·7	5·6	3·6	7·9	5·8	2·8
	Melbourne ...	5·2	5·2	7·3	4·5	4·2	8·1	4·3	5·9	4·4	8·0	5·3	2·5
	Camperdown	3·8	5·5	8·4	6·1	5·7	7·9	4·8	5·6	4·6	8·4	5·5	2·7
	Sandhurst ...	2·7	2·9	3·2	1·1	4·1	5 8	1·1	1·5	1·2	2·7	2·8	0·4
	Heathcote ...	2·6	3·2	5·2	2·6	3 6	7·2	2·4	3·9	2·5	7·3	4·4	1·4
	Castlemaine...	1·5	2·5	3·9	1·2	2·1	4·6	1·9	2·1	1·2	5·4	3·3	0·9
	Ballaarat ...	3·1	6·3	6·9	3·4	4·4	8·3	4·6	4·9	3·7	7·2	5·4	2·9
	Beechworth ...	2·9	2·8	6·1	2·7	2·2	7·3	1·1	4·1	3·5	6·8	4·9	2·3

117, 118. FIVE-DAY MEANS FOR THE MONTHS OF JANUARY AND FEBRUARY, 1859.

	STATIONS.	JANUARY.						FEBRUARY.					
		1st to 5th	6th to 10th	11th to 15th	16th to 20th	21st to 25th	26th to 30th	31st to 4th	5th to 9th	10th to 14th	15th to 19th	20th to 24th	25th to 1st
Temperature of Air.	Port Albert ...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	...	...	...	...	...	...	...	...	...	...	...	...
	Geelong ...	68·5	64·7	64·2	64·1	71·8	61·1	69·3	70·0	62·2	61·5	61·4	62·2
	Melbourne ...	69·6	66·1	65·4	66·7	74·4	62·4	69·2	71·5	60·1	62·9	63·9	62·6
	Camperdown ...	...	62·5	62·9	61·3	72·2	57·9	71·0	67·4	56·6	58·5	58·5	58·5
	Sandhurst ...	75·3	70·7	68·2	64·9	...	64·0	...	...	...	...	...	...
	Heathcote ...	73·9	70·8	68·5	65·7	74·6	62·9	75·4	76·3	62·5	64·8	64·1	65·1
	Castlemaine...	71·3	73·3	66·2	64·6	74·5	61·2	71·9	72·0	61·2	62·6	61·2	59·5
	Ballaarat ...	67·7	66·8	62·8	61·7	74·2	58·2	71·2	69·6	57·1	60·8	57·9	60·6
	Beechworth ...	78·8	68·5	68·5	64·2	72·3	64·9	74·3	78·0	63·5	66·3	64·6	66·5
Pressure of Air.	Port Albert ...	30·033	29·753	30·106	29·865	29·980	29·889	30·089	29·786	29·757	30·039	29·796	30·045
	Portland ...	29·986	29·787	30·055	29·873	29·842	29·907	30·018	29·790	29·729	29·981	29·858	30·067
	Geelong ...	29·946	29·719	30·032	29·825	29·864	29·852	29·986	29·753	29·700	29·949	29·786	29·976
	Melbourne ...	29·873	29·654	29·988	29·755	29·816	29·769	29·933	29·692	29·696	29·887	29·701	29·939
	Camperdown ...	...	...	...	...	...	...	...	...	...	...	...	...
	Sandhurst ...	29·126	28·952	29·269	29·102	...	29·049	...	...	...	...	...	...
	Heathcote ...	29·153	28·969	29·291	29·094	29·156	29·077	29·243	29·023	29·002	29·195	29·023	29·259
	Castlemaine...	28·910	28·798	29·036	28·899	28·956	28·742	29·044	28·831	28·802	28·990	28·811	29·027
	Ballaarat ...	28·521	28·304	28·620	28·418	28·474	28·426	28·586	28·369	28·310	28·511	28·362	28·591
	Beechworth ...	28·110	27·959	28·212	28·061	28·172	28·003	28·228	28·017	27·979	28·123	27·943	28·194
Relative Humidity.	Port Albert ...	...	...	...	...	...	...	...	...	...	...	...	...
	Portland ...	...	...	...	...	...	...	...	...	...	...	...	...
	Geelong ...	0·584	0·745	0·650	0·753	0·673	0·794	0·686	0·613	0·667	0·742	0·717	0·623
	Melbourne ...	0·598	0·798	0·711	0·701	0·625	0·725	0·692	0·600	0·694	0·674	0·670	0·665
	Camperdown ...	...	...	...	...	...	...	...	...	...	...	...	...
	Sandhurst ...	0·384	...	0·517	...	...	0·606	...	...	...	...	...	...
	Heathcote ...	0·562	0·653	0·640	0·680	0·621	0·641	0·476	0·435	0·576	0·530	0·580	0·515
	Castlemaine...	0·631	0·621	0·664	0·757	0·672	0·720	0·601	0·526	0·576	0·571	0·576	0·667
	Ballaarat ...	0·572	0·647	0·650	0·674	0·587	0·724	0·464	0·433	0·571	0·516	0·612	0·523
	Beechworth ...	0·480	0·654	0·600	0·740	0·635	0·655	0·508	0·460	0·470	0·477	0·566	0·531
Amount of Rain.	Port Albert ...	0·010	1·340	0·430	0·360	1·080	1·290	0 000	0·000	0·820	0·070	0·910	0·160
	Portland ...	0·000	0·410	0·140	0·130	0·000	0·490	0·000	0·120	0·970	0·020	0·270	0·040
	Geelong ...	0·000	0·050	0·070	0·230	0·450	0·800	0·000	0·000	0·300	0·000	0·000	0·000
	Melbourne ...	0·000	0·714	0·117	0·455	0·205	1·091	0·000	0·202	0·270	0·097	0·172	0·005
	Camperdown ...	0·000	0·300	0·210	0·370	0·280	0·830	0·000	0·010	0·690	0·080	0·000	0·060
	Sandhurst ...	0·000	0·130	0·000	1·810	0·000	1·780	...	...	...	...	...	...
	Heathcote ...	0·000	0·120	0·010	1·720	0·245	1·570	0·000	0·000	0·230	0·000	0·420	0·000
	Castlemaine...	0·000	0·050	0·190	0·310	0·270	0·910	0·000	0·000	0·240	0·000	0·610	0·000
	Ballaarat ...	0·000	0·330	0·290	0·100	0·300	1·280	0·000	0·000	0·530	0·000	0·190	0·020
	Beechworth ...	0·000	0·820	0·010	1·430	0·050	1·270	0·000	0·000	0·000	0·000	0·730	0·000
Amount of Cloud.	Port Albert ...	5·0	8·0	4·3	5·4	5·3	7·0	2·0	4·9	5·8	4·5	6·0	5·3
	Portland ...	5·9	9·0	6·3	7·6	4·9	6·2	3·2	7·4	6·0	4·6	5·6	4·3
	Geelong ...	4·5	6·3	5·7	6·7	6·2	6·6	2·0	4·0	5·0	5 0	5·7	5·0
	Melbourne ...	5·0	6·9	6·3	6·9	6·1	6·2	8·2	5·5	6·2	4·6	6·3	5·7
	Camperdown ...	4·9	7·2	4·8	7·6	7·0	6·8	1·1	5·3	7·7	5·2	3·6	6·0
	Sandhurst ...	1·3	4·8	2·2	3·1	3·0	2·1	...	...	...	...	...	...
	Heathcote ...	2·3	6·2	4·5	3·3	6·1	4·2	0·9	1·6	5·3	3·1	4·1	3·0
	Castlemaine...	0·5	3·0	2·8	2·3	4·2	1·8	0·1	0·7	2·3	1·7	2·2	1·5
	Ballaarat ...	4·1	6·8	4·1	6·2	5·4	6·1	0·7	2·0	6·4	4·7	6·5	5·0
	Beechworth ...	2 6	6·5	3·9	4·4	5·0	3·9	0·5	1·7	5·0	2·3	5·6	3·3

XIV.—METEOROLOGICAL SUMMARIES FOR EACH MONTH.

119. REGISTER.

The succeeding tables contain the following data :—

Mean temperature of air, which has been derived from the total number of observations, independently of the five-day means.

The maxima in temperature of air, in two columns, the one containing the date given in days and decimals of a day, and the other the value.

The minimum in temperature of air, in the same manner as above.

Mean pressure of air, derived from five-day means.

Maximum pressure of air, as above, in two columns, one containing the dates of observations, and the other the values.

Minimum pressure of air, as above.

The mean pressure of vapor for the month has been computed from the mean values of pressure of air, temperatures of air and evaporation.

Amount of rain for the month.

Number of days during which the wind blew from the eight cardinal points of the compass.

Remarks and notes, including anything worthy of notice, secondary maxima and minima, and several stations which did not furnish registers sufficiently complete to use the same for five-days means.

STATIONS.	Mean Temperature	Maximum.		Minimum.		Mean Pressure of Air.	Maximum.		Minimum.		Mean Pressure of Vapor.
	Fahrenheit.	Date.	Temperature.	Date.	Temperature.		Date.	Pressure.	Date.	Pressure.	
MARCH.	°		°		°	Inches.		Inches.		Inches.	Inches.
Ararat	69·2	7·3	99·0	30·0	...	...	...	...	...	...	...
Ballaarat	64·2	8·6	98·0	31·4	41·0	28·604	14·9	28·868	9·6	28·302	0·381
Beechworth	69·8	9·6	96·2	22·4	48·2	28·211	14·4	28·518	9·6	27·766	0·396
Camperdown ...	63·0	7·6	91·7	30·9	49·5	...	...	...	...	...	0·398
Castlemaine	69·1	7·6	104·2	22·4	41·2	29·078	14·4	29·504	9·6	28·787	0·428
Geelong	64·1	7·6	88·5	20·2	45·0	29·990	13·4	30·261	8·6	29·664	0·413
Gipps Land, Port Albert	61·6	...	...	...	...	...	...	...	...	...	...
Heathcote	68·2	8·6	101·8	18·4	41·0	29·253	14·4	29·593	8·6	28·919	0·306
Melbourne	65·6	7·6	93·2	23·2	47·0	29·946	14·4	30·241	8·6	29·620	0·441
Portland	62·4	7·6	100·0	30·4	46·0	30·024	2·4	30·249	25·6	29·748	0·398
Sandhurst	68·9	8·6	96·5	18·2	49·0	29·331	13·8	29·542	9·6	28·986	0·431
Swan Hill, Tyntindyer...	75·8	8·6	99·0	22·4	49·0	...	...	...	...	...	...
Warreneep	66·7	...	...	...	...	...	...	...	...	...	...
Welshpool	64·5	...	...	...	...	...	...	...	...	...	...
APRIL.											
Ararat	61·3	1·6	80·0	...	...	...	17·4	...	7·6	...	...
Ballaarat	54·8	1·6	80·4	24·2	38·6	28·648	17·4	28·984	7·6	28·299	0·334
Beechworth	60·1	1·6	85·8	9·2	42·6	28·262	17·4	29·536	7·6	27·952	0·302
Camperdown ...	55·5	1·6	72·0	...	...	...	...	...	...	...	0·353
Castlemaine	58·6	1·6	88·9	17·2	38·6	29·127	17·4	29·395	7·6	28·765	0·333
Geelong	58·0	1·6	75·8	24·2	41·0	30·069	17·4	30·375	7·6	29·630	0·342
Gipps Land, Port Albert	53·7	1·6	75·0	14·2, 17·2	38·5	...	...	...	...	...	...
Heathcote	59·6	1·6	87·0	26·2	39·4	29·346	17·4	29·648	7·6	28·994	0·342
Melbourne	58·7	1·6	85·8	25·2, 14·2	41·0	30·034	17·4	30·356	7·6	29·601	0·367
Portland	62·4	29·6	74·5	25·2	40·0	30·132	17·4	30·418	7·6	29·739	0·355
Sandhurst	59·4	1·6	75·6	13·2	45·0	29·419	17·4	29·672	7·6	29·077	0·343
Swan Hill, Tyntindyer...	66·1	1·6	85·0	13·2	45·5	...	...	...	...	...	...
Warreneep	57·8	1·6	75·0	...	...	...	17·4	...	28·6	...	...
Welshpool	57·8	1·6	...	...	...	...	17·4	...	7·6	...	...

NOTES FOR THE MONTH OF MARCH.

Camperdown.—Rain fell on the 9th, 13th, 17th, 21st, 28th, and 31st. Fog on the 9th, 17th, 20th, 25th, 26th, 28th, and 29th. Dew on the 5th, 18th, 23rd, 26th, 29th, and 31st.

Castlemaine.—Secondary minimum of barometer, 28·826″

Welshpool.—Rain fell on the 2nd, 11th, 17th, 18th, 23rd, 24th, and 25th. Lunar Halo on the 26th.

Yan Yean.—Amount of rain, 0·53.

Kooijoora.—Mean temperature, 71·5°; maximum, 96·2°, on the 8·6; minimum of 52·1°, on the 22·4. Amount of rain, 1·14. Winds in the Sense, S.E., N.W., 2·0, 6·0, 8·0, 2·0, 0·0, 3·0, 5·0, 3·0. Thunderstorm on the 11th and 24th. Lunar Halo on the 30th. Rain on the 12th and 24th.

THE MONTHS OF MARCH AND APRIL, 1858.

Amount of Rain.	Number of Days during which the Wind blew from								REMARKS.
	S.	S.E.	E.	N.E.	N.	N.W.	W.	S.W.	
Inches.									
...	5·0	5·0	0·0	5·0	4·0	0·0	0·0	11·0	Rain fell on the 9th, 12th, 13th, 17th, 24th, and 25th.
0·43	5·0	10·0	2·0	3·0	5·0	0·0	1·0	5·0	Lightning on the 12th. Lunar Halo on the 3rd. Rain on the 9th, 16th, 17th, 20th, 21st, 24th, and 31st.
0·86	1·6	3·3	6·0	3·6	7·0	3·6	1·6	2·0	Calms, 2. Rainy days, 7.
0·30	1·0	4·0	5·0	3·0	1·0	3·0	3·0	8·0	Calms, 2. Lightning on the 12th. Thunder on the 13th. Solar Halo on the 7th. Lunar Halo on the 3rd and 30th.
1·14	8·0	3·0	2·0	4·0	3·0	1·0	0·0	3·0	Calms, 8. Lightning on the 12th. Rain on the 9th, 16th, 24th, and 25th.
0·72	5·0	8·0	2·0	7·0	2·0	0·0	3·0	0·0	Lunar Halo on the 3rd. Rain fell on the 9th, 16th, 17th, 21st, and 24th.
...	...	...	...	...	...	...	...	...	
2·21	10·0	5·0	2·0	2·0	3·0	2·0	3·0	1·0	Lightning on the 12th. Lunar Halo on the 1st. Rain on the 21st and 25th.
1·09	10·0	5·0	2·0	3·0	1·0	1·0	2·0	5·0	
1·31	4·0	8·5	7·0	0·5	0·5	1·5	3·5	5·5	Lightning on the 6th and 13th. Thunderstorm on the 12th. Rainy days, 6.
2·30	7·0	1·3	3·6	2·0	4·6	0·6	1·3	1·0	Calms, 8. Lightning on the 13th. Rain on the 24th.
...	6·0	1·0	3·0	2·0	2·0	1·0	5·0	2·0	Thunderstorm on the 23rd.
...	8·0	2·0	1·0	4·0	4·0	2·0	0·0	10·0	Rain fell on the 9th, 10th, 22nd, 24th, and 27th.
...	0·0	6·0	2·0	1·0	0·0	3·0	2·0	5·0	
...	8·0	6·0	0·0	1·0	2·0	2·0	1·0	10·0	Rain fell on the 6th, 7th, 8th, 9th, 15th, 27th, 28th, and 29th. Thunder on the 11th, 15th, 27th, and 28th. Fog on the 24th. Frost on the 24th.
1·02	6·0	7·0	0·0	3·0	2·0	5·0	2·0	5·0	Rain fell on the 2nd, 6th, 7th, 8th, 11th, 12th, 15th, 22nd, 27th, 28th, and 29th. Lightning on the 22nd. Thunder on the 11th.
1·85	3·0	2·0	8·0	2·0	2·0	3·0	4·0	3·0	Calms, 4. Rain fell on the 22nd and 28th. Lightning on the 23rd. Thunder on the 24th.
1·23	2·0	4·0	5·0	2·0	1·0	1·0	4·0	9·0	Thunderstorm on the 27th. Rain fell on the 2nd, 4th, 5th, 6th, 7th, 8th, 9th, 11th, 12th, 21st, 22nd, 27th, 28th, and 29th.
0·61	8·0	1·0	...	3·0	2·0	1·0	2·0	7·0	Thunder on the 28th. Frost on the 15th. Rain fell on the 6th, 15th, 22nd, 27th, and 28th.
0·49	2·0	4·0	3·0	5·0	1·0	2·0	5·0	6·0	Calms, 3. Rain fell on the 1st, 11th, 22nd, 27th, and 28th.
...	...	...	...	...	...	...	...	...	
1·86	10·0	1·0	1·0	2·0	1·0	1·0	4·0	1·0	Calms, 5. Rain fell on the 11th, 22nd, and 28th. Thunderstorms on the 22nd and 28th.
0·54	8·0	5·0	2·0	3·0	5·0	3·0	1·0	3·0	
0·88	3·0	8·0	6·0	1·0	1·0	2·0	5·0	4·0	Rain fell on the 1st, 4th, 5th, 7th, 11th, 21st, and 26th. Lightning on the 27th. Lunar Halo on the 27th and 28th.
2·40	6·0	4·0	4·0	2·0	2·0	0·0	2·0	1·0	Secondary maximum, 74·8°, on the 11·6. Rain fell on the 6th, 7th, 10th, 21st, 22nd, and 28th. Thunder on the 22nd.
...	5·0	3·0	0·0	1·0	2·0	1·3	2·0	5·0	Rain fell on the 6th, 20th, 21st, 22nd, 26th, 27th, and 28th.
...	16·0	3·0	0·0	2·0	1·0	1·0	1·0	6·0	Secondary minimum barometer, on the 7·6. Rain fell on the 6th, 7th, 8th, 9th, 11th, 12th, 15th, 22nd, 27th, 28th, and 29th. Fog on the 4th.
...	1·0	3·0	4·0	0·0	0·0	1·0	3·0	10·0	

NOTES FOR THE MONTH OF APRIL.

Beechworth.—Aurora Australis on the 10th.

Portland.—Maximum temperature on the 31st March was 82·5°. Lunar rainbow on the 27th.

Camperdown.—Fog on the 4th, 21st, 24th, 26th, and 29th. Dew on the 11th, 15th, 16th, 17th, 20th, 24th, 25th, and 26th.

Yan Yean.—Rain fell on the 2nd, 7th, 9th, 26th, 27th, 28th, to the amount of 0·59 inches.

Welshpool.—Rain fell on the 2nd, 3rd, 4th, 5th, 7th, 8th, 15th, 22nd, 23rd, and 24th. Fog on the 21st. Lunar Halo on the 27th.

STATIONS.	Mean Temperature	Maximum.		Minimum.		Mean Pressure of Air.	Maximum.		Minimum.		Mean Pressure of Vapor.
	Fahrenheit.	Date.	Temperature.	Date.	Temperature.		Date.	Pressure.	Date.	Pressure.	
MAY.	°		°		°	Inches.		Inches.		Inches.	Inches.
Ararat	53·8	5·6	71·0	...	...	...	21·6	...	12·6	...	...
Ballaarat	49·3	5·6	68·7	22·2	32·3	28·540	21·4 22·4	28·898	12·6	28·034	0·310
Beechworth	50·7	1·6	72·2	20·2	32·0	28·177	21·4	28·519	12·6	27·811	0·288
Camperdown ...	51·1	1·6	72·0	...	...	...	1·4	...	12·6	...	0·334
Castlemaine	51·9	1·6	78·8	23·2	30·7	28·982	1·4	29·365	28·6	28·812	0·299
Geelong	54·2	6·6	75·0	27·2	38·7	29·961	21·4	30·356	12·6	29·423	0·327
Gipps Land, Port Albert	51·9	6·6	69·5	21·2	37·5	...	...	...	...	...	...
Heathcote	51·4	6·6	72·3	19·2	34·4	29·248	21·4	29·633	12·6	28·770	0·307
Melbourne	54·2	6·6	76·2	27·2	38·8	29·932	21·4	30·321	12·6	29·416	0·356
Portland	55·1	5·6	78·0	18·2	38·0	29·992	21·4	30·405	12·6	29·343	0·339
Sandhurst	52·4	6·6	67·5	22·2	35·0	29·282	21·4	29·586	12·6	28·927	0·337
Swan Hill, Tyntindyer	57·4	5·6	71·0	22·2	35·0	...	...	...	...	...	...
Warreneep	50·8	...	...	...	...	...	1·4 21·4	...	12·6	...	...
Welshpool	54·7	...	...	...	...	...	1·4	...	13·4	...	...
JUNE.											
Ararat	47·4	15·6 14·6	58·0	July 1st & 2nd	34·0	...	13·4	...	19·6	...	...
Ballaarat	45·6	4·6	60·5	July 3·2	27·5	29·865	14·4	28·970	19·6	28·209	0·277
Beechworth	46·1	13·6	60·8	„ 3·2	30·6	28·281	14·4	28·589	1·4	27·867	0·259
Camperdown ...	45·8	17·6	56·2	„ 3·4	34·5	...	13·6	...	19·9	...	0·282
Castlemaine	46·8	13·6	66·5	„ 3·2	25·6	29·120	7·4	29·509	19·9	28·709	0·276
Geelong	47·8	12·6 17·6	62·0	„ 2·2	28·5	30·071	14·4	30·424	...	29·673	0·270
Gipps Land, Port Albert	...	...	...	...	...	...	...	...	...	...	...
Heathcote	44·1	13·6	62·0	June 5·2	29·4	29·377	14·4	29·717	20·6	28·946	0·285
Melbourne	47·9	1·6	61·8	July 2·2	32·6	30·041	14·4	30·400	1·6	29·548	0·298
Portland	50·7	6·6	63·5	„ 2·2	31·0	30·090	14·4	30·450	19·6	29·600	0·315
Sandhurst	45·5	4·6	62·0	„ 3·2	31·2	29·354	14·4	29·687	1·4	28·912	0·273
Swan Hill	49·6	17·6	57·0	„ 4·2	39·0	...	...	...	...	...	...
Warreneep	45·8	15·6	55·0	...	...	...	14·6	...	20·4	...	...
Welshpool	48·8	3·6	...	...	...	...	14·6	...	1·4	...	...

NOTES FOR THE MONTH OF MAY.

Heathcote.—Fog on the 2nd, 7th, 8th, 21st, 22nd, 23rd, 26th, 28th, 29th, 30th, and 31st; fog cleared off generally at 9h. a.m. Thunderstorm on the 6th. Lightning on 17th. Lunar Halos on the 21st, 24th, 25th, and 28th. Frosts, 22nd, 23rd, 24th, and 25th.

Sandhurst.—Lightning on the 17th. Lunar Halo on the 24th.

Beechworth.—Secondary maximum on the 2·4 = 28·495″. Thunderstorms on the 6th and 16th. Hoar-frosts on the 20th and 21st. Lunar Halo on the 25th. Fog on the 29th.

Portland.- Secondary maximum on the 1·4 = 30·393″. Dew on the 2nd. Lunar Halos were seen on the 4th. Lunar Rainbow on the 29th.

Ballaarat.—Dew on the 25th. Hoar-frost on the 26th.

Castlemaine.—Secondary maximum on the 21·4 = 29·353″, and secondary minimum = 28·814″ on the 6·6.

Camperdown.—Lightning on the 5th and 16th. Lunar Halo on the 24th. Fog on the 3rd, 8th, 10th, 25th, and 26th. Dew on the 1st, 3rd, 5th, 6th, 8th, 9th, 10th, 11th, 15th, 16th, 18th, 21st, 22nd, 23rd, 24th, 25th, 26th, and 27th.

Yan Yean.—Rain fell on the 6th, 7th, 12th, 13th, 19th, 23rd to 28th, to the amount of 1·81.

Ararat.—Thunderstorm on the 7th and 16th. Frost on the 18th, 25th, and 26th. Fog on the 29th.

THE MONTHS OF MAY AND JUNE 1858.

Amount of Rain.	Number of Days during which the Wind blew from								Remarks.
	S.	S.E.	E.	N.E.	N.	N.W.	W.	S.W.	
Inches.									
...	4	3	0	3	4	9	2	6	Rain fell on the 4th, 6th, 7th, 8th, 9th, 11th, 12th, 13th, 14th, 16th, 19th, 21st, 27th, 28th, 29th, and 30th.
3·150	3	5	2	2	5	6	2	3	Rain fell on the 4th, 6th, 7th, 8th, 9th, 12th, 13th, 14th, 16th, 19th, 20th, 27th, 28th, 29th, and 30th.
2·760	1	3	10	4	5	3	3	2	Rain fell on the 4th, 5th, 6th, 12th, 14th, 16th, 17th, 29th, and 30th.
2·820	3	4	9	4	1	4	3	3	Rain fell on the 4th, 6th, 7th, 12th, 13th, 14th, 17th, 19th, 20th, 27th, 28th, 29th, and 30th.
2·960	...	...	...	...	...	...	...	...	Frost on the 18th, 22nd, and 23rd. Ice on the 23rd.
1·480	1	4	6	3	1	6	4	3	Calms, 2. Rain fell on the 3rd, 6th, 12th, 13th, 16th, 19th, 20th, 27th, and 29th. Dew on the 24th. Fog on the 26th. Lunar Halo on the 24th.
...	...	...	...	...	...	...	...	...	
1·470	7	3	4	3	5	3	2	1	Rain fell on the 6th, 12th, 13th, 14th, and 31st.
1·249	1	2	1	8	8	6	1	4	
2·030	1	3	5	3	3	2	1	1	Rain fell on the 6th, 7th, 12th, 13th, 16th, 18th, 21st, 22nd, 23rd, 29th, and 30th. Thunderstorm on the 16th.
1·660	3	2	5	3	1	1	2	0	Rain fell on the 3rd, 4th, 6th, 8th, 12th, 13th, 16th, 27th, 29th, and 30th. Thunderstorm on the 16th.
0·600	5	4	0	3	3	2	4	1	Rain fell on the 3rd, 4th, 6th, 11th, 12th, 13th, and 30th. Fog on the 24th. Lightning on the 30th.
...	11	0	3	1	12	0	1	3	Rain fell on the 4th, 6th, 9th, 12th, 13th, 14th, 15th, 19th, 27th, 28th, 29th, 30th, and 31st. Fog on the 27th and 29th. Hoar-frost on the 22nd.
...	0	4	7	1	0	0	3	5	Lightning on the 16th.
...	2	1	0	0	11	10	1	5	Rain fell on the 1st, 2nd, 4th, 7th, 8th, 9th, 10th, 11th, 12th, 19th, 20th, 22nd, 26th, 27th, 28th, and 29th, and 3rd and 4th July. Frost on 1st, 2nd, 3rd, and 4th July.
1·29	2	2	2	4	15	1	1	4	Rain fell on the 1st, 2nd, 7th, 8th, 9th, 10th, 11th, 12th, 19th, 26th, 27th, 28th, and 29th, and 3rd and 4th July. Frost on the 2nd, 3rd, and 4th July.
3·10	3	2	9	4	3	3	2	3	Rain fell on the 7th, 10th, 19th, 20th, 21st, 27th, and 28th. Fog on the 1st, 2nd, and 10th. Dew on the 3rd and 23rd. Hail on the 20th. Frost on the 2nd, 3rd, and 4th July.
...	2	1	4	4	5	3	4	5	Rain fell on the 1st, 2nd, 7th, 8th, 9th, 10th, 11th, 12th, 19th, 20th, 23rd, 26th, 28th, and 30th, and 3rd and 4th July.
1·51	5	1	3	3	4	2	2	3	Rain fell on the 8th and 19th. Fog on the 28th and 29th.
0·88	2	1	1	3	2	7	6	3	Rain fell on the 7th, 8th, and 29th, and 3rd and 4th July. Fog on the 5th, and 2nd July.
...	...	...	...	...	...	...	...	...	
1·60	6	2	5	0	5	4	4	0	Rain fell on the 1st, 7th, 8th, 19th, 26th, and 27th, and 4th July. Fog on the 1st, 2nd, 3rd, 4th, 5th, 8th, 10th, 11th, 14th, 15th, 21st, 22nd, 23rd, 24th, 25th, and 28th. Frost on 3rd, 5th, 10th, 14th, 15th, 22nd, and 24th, and 1st, 2nd, and 4th July. Lunar Halos on the 17th, 18th, 20th, 24th, and 25th.
0 687	0	1	0	8	18	1	4	3	
3·23	3	2	3	2	11	1	5	2	Rain fell on the 1st, 7th, 8th, 9th, 10th, 19th, 20th, 21st, 22nd, 27th, 28th, and 29th, and 3rd and 4th July. Frost on the 1st and 2nd July.
1·84	5	1	1	1	3	1	1	0	Rain fell on the 2nd, 8th, 9th, 19th, 20th, 26th, and 27th. Fog on the 8th, 20th, 21st, and 24th. Lunar Halos on the 17th, 18th, and 24th. Frost on the 1st and 3rd July.
...	1	1	1	1	4	4	2	4	Rain fell on the 3rd, 7th, 8th, 19th, 20th, 21st, 26th, 27th, and 28th.
...	...	...	...	...	...	...	...	...	
...	5	5	4	...	...	...	4	8	Frost on the 15th. Rain fell on the 3rd and 4th July.

NOTES FOR THE MONTH OF JUNE.

Portland.—Lunar Halos on the 16th and 17th.

Ballaarat.—Fog on the 2nd, 14th, 21st, 22nd, 27th, and 28th. Hoar-frost on the 3rd, 15th, 16th, 20th, and 22nd. Dew on the 13th. Lunar Halos on the 17th, 18th, 23rd, and 24th.

Camperdown.—Fog on the 5th, 10th, and 11th June, and 1st and 2nd July. Dew on the 1st, 3rd, 4th, 14th, 15th, 16th, 17th, 18th, 19th, 21st, 22nd, 25th, 26th, and 28th June, and 3rd July. Frost on the 14th and 17th June and on the 2nd July. Lunar Halos on the 17th, 18th, 24th, and 25th. A brilliant meteor at 8.30 p.m. on the 15th.

Yan Yean.—Rain fell on the 7th, 8th, 9th, 10th, 11th, 12th, 13th, 19th, 20th, 22nd, 27th, and 29th June, and 3rd and 4th July, to the amount of 1·34 inch.

Ararat.—Fog on the 1st, 8th, 12th, 22nd, and 30th. Frost on the 5th, 15th, 16th, and 22nd June, and 1st, 2nd, 3rd, and 4th July. Lunar Halos on the 18th, 24th, and 25th. Shooting Stars were seen on the 21st.

STATIONS.	Mean Temperature	Maximum.		Minimum.		Mean Pressure of Air.	Maximum.		Minimum.		Mean Pressure of Vapor.
	Fahrenheit.	Date.	Temperature.	Date.	Temperature.		Date.	Pressure.	Date.	Pressure.	
JULY.	°		°		°	Inches.		Inches.		Inches.	Inches.
Ararat	46·5	31·6	59·0	3·0	36·0	...	30·9 31·4	...	15·4	...	...
Ballaarat	42·4	19·6	57·1	5·2	30·0	28·536	30·6	28·777	15·4	28·107	0·219
Beechworth	40·8	22·6	57·6	5·2	27·8	28·194	18·4	28·465	15·4	27·817	0·226
Camperdown ...	44·7	22·6	53·0	...	...	...	18·4	...	15·4	...	...
Castlemaine	43·7	30·6	60·4	7·2 5·2	27·6 27·8	29·042	19·4	29·328	15·9	28·671	0·236
Geelong	48·0	20·6	61·5	18·2	36·0	29·966	30·4	30·262	15·4	29·420	0·246
Gipps Land, Port Albert	...	...	...	...	...	...	...	...	...	...	...
Heathcote	43·4	30·6	56·8	5·2	24·4	29·261	18·4	29·554	15·4	28·816	0·223
Melbourne	47·8	26·6 22·6	54·9	20·2	35·7	29·928	29·4	30·226	15·0	29·392	0·293
Portland	49·4	...	...	...	...	...	30·4	30·342	14·4	29·508	0·294
Sandhurst	43·8	30·6	60·8	5·2	32·0	29·254	30·4	29·494	15·4	28·839	0·234
Swan Hill	42·8	7·4	56·0	Aug. 1·2	31·5	...	...	...	...	...	...
Warreneep	...	16·0	...	30·0	...	...	July 1·4 30·6	...	15·4	...	...
Welshpool	49·8	20·6	57·0	28·0	43·7	...	30·6	...	15·4	...	...
AUGUST.											
Ararat	48·14	23·6 28·6	...	25·0	...	...	15·4	...	10·6	...	...
Ballaarat	45·1	28·4	64·2	25·2 26·2	31·0	28·433	16·4	28·660	10·9	27·933	0·231
Beechworth	45 4	28·6	67·8	15·0	33·0	28 066	23·4	28·445	10·9	27·550	0·237
Camperdown ...	46·5	...	...	...	...	...	16·4	...	10·6	...	...
Castlemaine	47·6	28·0	73·0	26·0	30·2	28 977	15·6	29·293	10·6	28·662	0·254
Geelong	50·2	27·6	72·3	24·2	36·0	29·829	16·4	30·116	10·6	29·319	0·262
Gipps Land, Port Albert	52·9	2·6	72·1	4·0	33·0	29·853	15·9	30·092	10·9	29·355	0·265
Heathcote	48·1	28·6	68·7	25·0	29·6	29·129	26·4	29·402	10·9	28·596	0·245
Melbourne	50 9	27·6	68·0	26·0	35·5	29·788	26·4	30·075	10·6	29·269	0·297
Portland	...	...	...	...	...	29·853	15·4	30·229	10·6	29·376	...
Sandhurst	47·6	28·4	69·0	25·0	33·5	29·103	26·4	29·369	10·6	28·578	0·240
Swan Hill	46·4	28·4	63·0	...	...	...	...	...	...	...	...
Warreneep	...	28·6	72·0	19·8	36·0	...	15·4	...	10·4	...	...

NOTES FOR THE MONTH OF JULY.

Geelong.—Lightning on the 15th.

Sandhurst.—Fog on the 13th, 19th, 20th, and 22nd.

Portland.—Lunar Halos on the 19th and 29th. Lightning on the 14th and 15th.

Ballaarat.—Frost on the 5th. Fog on the 5th. Lunar Halo on the 18th.

Camperdown.—Fog on the 5th, 7th, 19th, and 29th. Dew on the 6th, 9th, 20th, 29th, and 31st, Lightning on the 14th. Meteor on the 7th. Frost on the 20th.

Yan Yean.—Rain fell on the 5th, 6th, 7th, 11th, 12th, 13th, 14th, 15th, 17th, 22nd, 23rd, 24th, 25th, 26th, 27th, 28th, 29th, 30th, and 1st and 2nd August, to the amount of 1·73 inch.

Welshpool.—Rain fell on the 5th to 9th, 11th, 12th, 14th, 15th, 16th, 17th, 19th, 21st, 23rd, 24th, 26th, 27th, and 3rd August. Frost on the 29th. Thunderstorms on the 23rd, and thunder only on the 24th. Hail on the 24th.

THE MONTHS OF JULY AND AUGUST, 1858.

Amount of Rain.	Number of Days during which the Wind blew from								REMARKS.
	S.	S.E.	E.	N.E.	N.	N.W.	W.	S.W.	
Inches.									
...	3	0	1	0	6	10	3	8	Rain fell on the 5th, 6th, 8th, 10th to 16th, 21st to 29th. Frost on the 5th and 20th. Hail on the 10th. Lightning on the 10th. Thunder on the 15th, and 2nd August.
2·36	6	3	0	0	7	7	3	5	Rain fell on the 5th, 8th, 10th, 11th, 12th, 13th, 14th, 15th, 17th to 24th, 26th, 27th, and 1st and 2nd August.
4·00	3	2	4	3	5	1	5	4	Rain fell on the 8th, 11th, 14th, 15th, 21st, 23rd, 24th, 26th, and 2nd August. Frost, 5th, 19th, 29th, 30th. Fog on the 17th.
...	6	1	3	0	2	3	12	4	Rain fell on the 6th, 8th, 10th, 11th to 18th, 20th to 29th, and 1st, 2nd, and 3rd August. Hail fell on the morning of the 24th.
2·04	9	...	...	1	4	5	10	1	Rain fell, 10th, 12th, 21st, 23rd, 24th. Fog on the 5th and 21st.
2·40	2	1	0	1	1	5	14	4	Rain fell, 5th, 12th, 20th, 23rd, 26th, 27th, and 28th. Fog on the 20th.
...	...	...	...	...	...	...	...	...	
1·77	6	3	4	1	5	7	4	1	Rain fell on the 8th, 10th, 17th, 20th, 21st, 22nd, 23rd, 26th, 27th. Frost on the 7th, 30th, 31st, and 1st August. Fog on the 5th, 11th, 16th, 19th, 20th, 27th, 29th, and 31st. Lightning, 11th. Shooting stars on the 19th and 28th.
1·870	2	0	0	3	12	8	2	2	
5·42	2	4	3	2	4	4	10	3	Rain fell on the 5th, 6th, 7th, 9th, 10th, 11th, 12th, 14th, 15th, 16th, 17th, 18th, 20th, 21st, 22nd, 23rd, 25th, 26th, and 2nd August.
2·87	6	...	1	...	6	2	3	1	Rain fell, 5th, 8th, 10th, 12th, 14th, 15th, 16th, 17th, 20th, 21st, 23rd, 26th, 27th, and 1st August.
0·80	6	0	1	0	2	2	7	5	Rain fell on the 5th, 10th, 11th, 13th, 20th, 21st, 23rd, 24th, 25th, 26th, 27th, and 2nd August.
...	6	0	1	0	8	12	0	2	Rain fell on the 5th, 6th, 7th, 8th, 10th, 12th, 13th, 14th, 15th, 17th, 18th, 21st, 22nd, 23rd, 24th, 26th, 27th, 28th, 29th, and 2nd August. Fog on the 16th, 19th, 20th.
...	3	2	1	0	0	0	5	16	
...	...	...	...	...	11	8	2	10	Rain fell on the 2nd, 6th, 7th, 9th to 15th, 18th to 21st, 24th, 28th to 31st, and 2nd September.
2·32	5	0	0	1	11	4	2	7	Rain fell on the 7th, 8th, 9th, 12th to 16th, 18th to 21st, 24th, 29th, 30th, 31st, and 2nd September.
5·11	2	2	5	4	3	3	5	5	Rain fell on the 5th, 7th, 10th, 18th, 19th, 21st, 22nd, 24th, 28th, 30th, and 31st.
...	3	0	0	1	1	4	7	8	Rain fell on the 6th, 7th, 9th to 16th, 19th, 20th, 21st, 24th, 28th, 29th, 30th, 31st, and 2nd September.
1·610	2	0	1	3	7	5	11	1	Rain fell on the 10th.
1·56	2	0	0	1	1	5	10	6	Rain fell on the 10th, 11th, 12th, 15th, 17th, 18th, 19th, 20th, 24th, 28th, 29th, and 30th. Fog on the 17th.
3·10	1	0	4	1	1	7	10	6	Rain fell on fourteen days. Dew on the 4th, 5th, 6th, 8th, 28th, and 2nd Sept.
2·57	5	2	4	1	4	7	5	3	Rain fell, 10th, 11th, 19th, 20th, 24th, 29th, 30th, 31st, and 2nd September. Frost on 6th, 16th, 25th to 27th.
1·457	0	0	1	5	8	7	3	6	
3·90	4	4	0	1	7	6	8	1	Rain fell on the 6th, 7th, 9th, 10th, 11th, 19th, 20th, 21st, 23rd, 28th, 29th 30th.
2·30	6	0	2	0	5	0	6	2	Rain fell on the 6th, 9th, 10th, 18th, 19th, 21st, 30th, and 2nd September.
1·21	2	0	1	0	2	4	7	8	Rain fell, 9th, 10th, 11th, 13th, 18th, 19th, 20th, 21st, 24th, 27th, 29th, 30th, 31st, and 2nd September. Lunar Halo on the 25th.
...	4	0	1	0	14	6	3	3	Rain fell on the 9th to 16th, 18th, 20th, 21st, 22nd, 24th, 29th, 30th, 31st, and 1st September. Hail on the 19th and 24th.

NOTES FOR THE MONTH OF AUGUST.

Heathcote.—Fog on the 8th. Lunar Halos on the 17th, 18th, 19th, 23rd. Rainbow at 4 p.m. on the 21st.

Beechworth.—Hail fell on the 20th and 30th. Thunder on the 24th, 19th. Fog on the 19th and 30th.

Ballaarat.—Fog on the 4th and 17th. Hail on the 21st. Frost on the 25th and 26th.

Port Albert.—Lunar Halos on the 18th and 25th. Thunder only on the 29th.

Camperdown.—Hail fell on the 24th and 30th. Thunder without lightning on the 24th. Fog on the 4th and 5th. Dew on the 4th, 5th, 18th, and 27th. Frost on the 5th, 25th, 26th, 27th. Lunar Halo on the 16th.

Van Yean. Rain fell on the 6th, 7th, 8th, 9th, 10th, 11th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 24th, 28th, 29th, 30th, and 1st Sept., to the amount of 1·59.

STATIONS.	Mean Temperature	Maximum.		Minimum.		Mean Pressure of Air.	Maximum.		Minimum.		Mean Pressure of Vapor.
	Fahrenheit.	Date.	Temperature.	Date.	Temperature.		Date.	Pressure.	Date.	Pressure.	
SEPTEMBER.	°		°		°	Inches.		Inches.		Inches.	Inches.
Ararat	50·4	...	...	...	...	...	Sep. 2·4	...	23·6	...	...
Ballaarat	46·0	19·0	70·0	10·0	31·7	28·409	„ 2·9	28·862	23·6	27·896	0·245
Beechworth	47·2	19·0	70·2	30·0	32·2	28·054	Oct. 2·4	28·456	22·9	27·672	0·262
Camperdown ...	47·5	...	...	...	...	...	Sep. 2·4	...	23·6	...	...
Castlemaine	49·6	19·0	77·2	30·0	30·5	28·888	„ 17·4	29·296	23·9	28·416	0·284
Geelong	51·0	9·6	69·5	11·2	37·0	29·837	„ 17·4	30·242	23·9	29·232	0·262
Gipps Land, Port Albert	54·8	18·0	72·4	Oct. 2·0	37·5	29·692	Oct. 2·4	30·381	23·6	29·248	0·268
Heathcote	50·2	19·0	77·5	10·0	30·0	29·125	Sep. 2·4	29·587	23·6	28·586	0·244
Melbourne	51·6	19·0	72·2	10·0	35·9	29·786	Oct. 2·0	30·320	23·0	29·197	0·298
Portland	...	...	...	...	...	29·884	Sep. 2·9	30·394	23·6	29·310	...
Sandhurst	49·9	18·0	73·2	30·0	34·2	29·100	„ 2·4	29·528	23·6	28·598	0·238
Swan Hill	50·6	...	...	...	...	...	...	...	...	...	...
Warreneep	...	...	...	...	...	...	„ 2·4	...	22·6	...	...
OCTOBER.											
Ararat	60·0	15·6	84·0	...	...	...	22·4	...	18·9	...	...
Ballaarat	55·4	15·0	82·0	20·0	32·8	28·553	22·4	28·956	18·9	27·998	0·255
Beechworth	58·9	26·0	85·6	21·0	33·2	28·173	23·4	28·543	19·9	27·760	0·312
Camperdown ...	55·9	24·0	76·0	...	...	...	22·9	...	19·9	...	...
Castlemaine	57·0	26·0	87·6	21·0	29·7	29·037	4·4	29·503	18·9	28·505	0·330
Geelong	57·0	24·0	87·5	20·0	36·0	29·967	22·4	30·423	18·9	29·420	0·280
Gipps Land, Port Albert	54·0	17·0	87·5	3·0	38·5	30·050	22·9	30·420	19·6	29·445	0·375
Heathcote	59·4	15·0	87·6	21·0	28·3	29·251	22·4	29·664	19·6	28·763	0·265
Melbourne	57·8	25·0	86·5	20·0 and 21·0	39·3	29·937	22·0	30·387	19·0	29·342	0·332
Portland	...	14·0	84·0	26·0	36·7	30·016	22·4	30·458	18·6	29·424	...
Sandhurst	61·4	15·0	87·0	20·0 and 21·0	36·0	29·220	29·4	29·608	19·6	28·768	0·261
Swan Hill	59·9	15·0	78·0	...	...	...	...	...	...	...	...
Warreneep	...	...	...	...	...	...	3·6	...	19·9	...	...

NOTES FOR THE MONTH OF SEPTEMBER.

Heathcote.—Fog on the 13th and 24th. Rainbow on the 7th and 16th. Lightning on the 19th and 20th. Lunar Halos on the 16th, 19th, and 20 h.

Portland.—Thunderstorm on the 14th, 15th, and 23rd. Thunder only on the 18th. Lunar Rainbow on the 25th.

Ballaarat.—Hail on the 16th and 24th. Frost on the 10th. Lunar Halo on the 19th.

Camperdown.—Frost on the 4th. Fog on the 13th, and on the 1st October. Hail fell on the 11th, 15th, and 29th. Thunder on the 23rd and 24th. Lunar Halo on the 21st.

Yan Yean.—Rain fell on the 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 19th, 20th, 21st, and 22nd to 30th, to the amount of 2·30 inches.

Ararat.—Hail fell on the 15th.

Beechworth.—Thunderstorm on the 9th, 20th, and 24th. Frost on the 13th and 30th. Rainbow on the 9th.

Port Albert.—Dew on the 2nd, 6th, 12th, and 18th. Hail on the 12th.

THE MONTHS OF SEPTEMBER AND OCTOBER, 1858.

Amount of Rain.	Number of Days during which the Wind blew from								Remarks.
	S.	S.E.	E.	N.E.	N.	N.W.	W.	S.W.	
Inches.									
...	2	0	0	1	10	6	1	10	Rain fell on 5th to 16th, 19th, 20th to 26th, 23rd to 30th.
3·27	3	0	1	0	8	4	4	10	Rain fell on the 5th, 6th, 7th, 8th, 10th to 22nd, 24th to 26th, and 28th to 30th.
3·18	1	0	3	3	3	4	9	4	Rain fell on the 3rd, 4th, 5th, 9th, 11th, 12th, 14th, 15th, 20th, 22nd, 23rd, 24th, and 29th. Hail on the 9th and 24th.
...	1	0	2	1	1	3	14	7	Rain fell on the 5th, 6th, 7th, 8th, 9th, 11th, 12th, 13th, 15th, 16th, 20th to 26th, and 28th to 30th. Dew on the 4th, 5th, 10th, 17th, 18th, and 20th, and 2nd October.
1·71	6	1	2	1	3	2	10	4	Rain fell on the 7th, 9th, and 29th. Frost on the 10th, 20th, and 24th.
2·55	1	2	2	1	1	4	14	5	Rain fell on the 11th, 12th, 15th, 23rd, 24th, 28th, and 29th.
2·84	0	2	2	1	1	6	16	0	Rain fell on the 2nd, 5th, 7th, 9th, 11th, 12th, 14th, 15th, 16th, 19th, 20th, 22nd, 23rd, 24th to 26th, 29th and 30th.
2·06	4	1	1	2	3	9	5	5	Rain fell on the 7th, 11th, 14th, 16th, 19th, 22nd, 23rd, 24th, and 29th. Hail on the 15th and 24th. Frost on the 10th, 13th, 16th, 17th, and 30th, and 1st October.
1·96	2	1	0	0	10	5	9	3	
3·58	4	1	1	0	2	7	10	5	Rain fell on the 5th, 6th, 7th, 10th, 11th, 14th, 16th, 20th, 23rd, 24th, 25th, 28th, and 30th. Hail on the 15th and 24th.
1·48	8	0	1	0	3	0	7	2	Rain fell on the 11th, 14th, 15th, 22nd, 23rd, 24th, 26th, and 28th. Hail on the 19th and 24th. Lunar Halo on the 19th. Lightning on the 19th.
0·40	1	1	0	0	3	6	8	7	Rain fell on the 3rd, 5th, 6th, 11th, 13th, 15th, 16th, 22nd, 25th, 28th, and 29th.
...	6	0	2	0	8	6	2	6	Rain fell on the 3rd, 5th, 6th, 7th, 8th, 9th, 11th, 12th, 14th, 15th, 16th, 19th to 29th. Hail fell on the 12th, 15th, and 29th. Snow fell on the 11th and 15th. Hoar-frost on the 10th.
...	12	0	0	0	7	5	1	6	Rain fell on the 8th, 10th, 16th, 18th, 19th, 20th, 21st, 27th, 28th, and 30th, and 1st November.
0·57	7	6	3	1	4	5	1	4	Rain fell on the 8th, 9th, 16th, 17th, 19th, 20th, 21st, 22nd, 25th, 27th, and 28th, and 1st November.
1·65	3	1	3	4	8	2	4	3	Rain fell on the 8th, 19th, 27th, and 28th. Hot winds on the 15th and 16th.
...	1	2	2	2	3	2	7	10	Rain fell on the 9th, 10th, 11th, 16th, 17th, 19th, 20th, 21st, 22nd, and 24th, and 1st November.
0·21	4	2	3	4	5	3	6	4	Rain fell on the 4th, 16th, and 27th, and 4th November. Hot winds on the 15th, 16th, 24th, and 25th.
0·41	3	7	2	1	1	4	6	4	Rain fell on the 9th, 17th, and 28th, and 1st November. Hail on the 19th. Hot wind on the 25th. Rainbow on the 8th.
1·20	1	1	8	1	1	0	14	1	Rain fell on the 11th. Dew on the 5th, 6th, 12th, 15th, and 24th. Fog on the 7th.
0·28	6	9	1	1	4	3	2	3	Rain fell on the 8th, 16th, 17th, 20th, 21st, 25th, and 27th, and 1st November. Hail on the 20th.
0·78	11	1	1	4	5	0	3	5	
0·99	4	4	8	0	3	3	6	2	Rain fell on the 9th, 16th, 18th, 19th, and 20th, and 1st November.
0·14	9	1	2	0	5	0	1	2	Rain fell on the 8th, 20th, 25th, and 27th, and 1st November. Frost on the 20th and 21st.
0·58	4	1	6	0	2	3	5	2	Rain fell on the 8th, 27th, and 28th, and 1st November.
...	9	0	0	0	7	6	0	6	Rain fell on the 6th, 11th, 15th, 16th, 18th, 20th, 21st, 24th, 27th, 28th, and 29th, and 1st November.

NOTES FOR THE MONTH OF OCTOBER.

Heathcote.—Hoar-frost on the 20th, 21st, and 22nd. Shooting stars on the 6th. Hot winds on the 15th, 16th, 24th, and 25th, and 1st November. Thunder on the 8th. Thunderstorm on the 25th. Lunar Halos on the 20th and 24th.

Sandhurst.—Lightning on the 25th.

Portland.—Hot wind on the 15th. Hail on the 18th. Thunder on the 15th and 16th. Lunar Halo on the 14th.

Tailaarat.—Hot winds on the 8th, 15th, and 25th, and 1st November. Hail on the 19th. Dew on the 13th and 14th.

Camperdown.—Dew on the 3rd, 5th, 6th, 7th, 12th, 14th, 15th, and 24th to 30th. Lunar Halo on the 17th.

Van Yean.—Maximum, 92·2°; minimum, 35·3°, on the 19th. Rain (0·65 inch) fell on the 9th, 10th, 11th, 16th 18th, 20th, 21st, 22nd, 23rd, 24th, 26th, and 31st.

Warrenrep.—Hail fell on the 20th. Snow in considerable quantities on the 20th.

Buchworth.—Lightning on the 15th. Snow on the 20th. Hail on the 20th.

Swan Hill.—Hot winds on the 13th, 15th, and 25th.

Ararat.—Snow fell on the 20th. Hot wind on the 25th. Frost on the 21st, 22nd and 23rd. Lunar Halo on the 11th. Bush fires on the 14th.

STATIONS.	Mean Temperature	Maximum.		Minimum.		Mean Pressure of Air.	Maximum.		Minimum.		Mean Pressure of Vapor.
	Fahrenheit.	Date.	Temperature.	Date.	Temperature.		Date.	Pressure.	Date.	Pressure.	
NOVEMBER.	°		°		°	Inches.		Inches.		Inches.	Inches.
Ararat	69·1	22·0	104·0	...	...	...	25·9	...	30·6	...	...
Ballaarat	61·3	22·0	98·2	3·0	37·0	28·464	25·9	28·802	30·6	28·102	0·359
Beechworth	65·6	22·0	96·2	3·0	36·8	28·102	22·4	28·335	30·9	27·783	0·379
Camperdown ...	59·6	22·0	91·6	...	...	...	25·9	...	30·6	...	...
Castlemaine	64·9	23·0	101·4	3·0	33·8	28·951	25·9	29·424	30·6	28·588	0·362
Geelong	61·2	20·0	102·0	3·0	39·5	29·894	25·4	30·257	30·6	29·260	0·342
Gipps Land, Port Albert	63·2	21·0	98·5	4·0	37·9	29·963	25·9	30·299	30·6	29·450	0·386
Heathcote	66·3	23·0	102·2	4·0	37·6	29·153	25·9	29·495	30·6	28·796	0·350
Melbourne	63·1	22·0	103·2	4·0	39·5	29·833	25·0	30·232	30·0	29·417	0·403
Portland	...	21·0	94·6	4·0	43·5	29·963	25·4	30·341	30·4	29·551	...
Sandhurst	67·3	23·0	99·8	3·0	38·5	29·124	25·9	29·445	30·6	28·767	0·332
Swan Hill	66·0	22·0	88·0	3·0	38·0	...	...	...	...	...	...
Warreneep ...	64·0	22·0	98·0	2·0	...	...	22·4	...	30·6	...	...
Yan Yean	...	22·0	109·8	26·0	39·0	...	...	...	...	...	...
DECEMBER.											
Ararat	70·8	31·0	98·0	...	...	...	30·4	...	19·6	...	...
Ballaarat	61·1	30·0	89·1	9·0	37·5	28·382	30·4	28·773	19·4	27·618	0·348
Beechworth	67·0	24·0	95·0	21·0	42·8	28·019	30·4	28·425	19·4	27·248	0·389
Camperdown ...	61·7	31·0	89·4	...	...	...	30·4	...	18·6	...	...
Castlemaine	65·8	15·0	100·8	9·0	37·1	28·683	28·9	29·327	19·4	28·126	0·380
Geelong	61·7	13·0	91·0	7·0	41·5	29·788	29·4	30·207	19·4	29·106	0·412
Gipps Land, Port Albert	...	2·0	96·1	10·0	41·8	29·887	30·4	30·256	19·6	28·982	0·409
Heathcote	66·8	15·0	98·0	9·0	38·3	29·061	30·9	29·463	19·6	28·226	0·396
Melbourne	63·5	31·0	94·3	10·0	45·3	29·735	30·0	30·153	19·0	28·872	0·418
Portland	...	30·0	94·4	28·0	44·4	29·835	29·9	30·189	19·9	29·183	...
Sandhurst	68·0	15·0	99·3	20·0	41·0	29·045	29·4	29·488	26·9	28·694	0·447
Swan Hill	74·0	15·0	97·0	...	...	...	...	...	...	...	...
Warreneep	62·2	14·0	88·0	...	...	...	30·4	...	18·4	...	...
Yan Yean	...	4·0	101·6	10·0	40·0	...	...	...	...	...	...

NOTES FOR THE MONTH OF NOVEMBER.

Geelong.—Thunderstorm on the 11th. Hot Wind on the 21st and 22nd. Lunar Halos on the 16th, 17th, and 19th.

Heathcote.—Thunderstorm on the 6th, 11th, 12th, 17th, and distant thunder on the 13th and 29th. Lunar Halos on the 16th and 17th. Solar Halo on the 21st.

Sandhurst.—Thunderstorm on the 6th and 29th. Thunder only on the 11th and 17th. Hot Winds on the 21st and 22nd.

Beechworth.—Lightning on the 5th and 29th. Thunder on the 12th and 30th. Hot Wind on the 17th, 22nd, and 23rd. Bush fires on Indigo Creek on the 20th.

Ballaarat.—Thunderstorm on the 23rd. Thunder on the 6th. Lightning on the 29th. Hot Winds on the 22nd and 23rd.

Castlemaine.—Thunder on the 6th and 11th. Thunderstorm on the 12th. Lightning on the 28th. Fog on the 14th. Hot Winds 20th, 21st, 22nd, and 23rd. Mist, 28th.

Port Albert.—Thunderstorm on the 6th, 11th, and 17th. Dew on the 15th. Hot Wind on the 22nd. Lightning on the 29th.

Camperdown.—Hail fell on the 2nd. Light Frost on the 4th. Dew on the 4th, 5th, 18th, 20th, 21st, 23rd, 25th, 26th, and 27th. Fog on the 9th. Lightning on the 6th and 29th. Thunder on the 11th and 29th. Thunderstorm on the 17th. Solar Halo on the 10th and 20th. Lunar Halo on the 17th. Hot Wind on the 21st.

Yan Yean.—Hot Winds on the 20th, 21st, 22nd, and 23rd. Bush fires on the 20th.

Swan Hill.—Hot Winds on the 21st, 22nd, 23rd, and 24th.

Warreneep.—Thunder only on the 11th. Hot Wind on the 23rd.

Ararat.—Thunder only on the 11th, 12th, and 23rd. Hot Winds on the 21st, 22nd, and 23rd. Bush fires on the 21st and 22nd.

THE MONTHS OF NOVEMBER AND DECEMBER, 1858.

Amount of Rain.	Number of Days on which the Wind blew from								Remarks.
	S.	S.E.	E.	N.E.	N.	N.W.	W.	S.W.	
Inches.									
...	5	2	0	1	13	0	0	9	Rain fell 6th, 7th, 9th, 11th, 14th, 15th, 16th, 23rd, 27th, 28th, and 30th. Thunderstorm on the 6th, 16th, and 29th.
1·82	5	3	1	2	5	6	1	6	Rain fell on the 2nd, 6th, 7th, 11th, 13th, 15th, 18th, 20th, 23rd, 24th, 27th, 28th, 29th, 30th, and 1st December.
2·82	3	1	4	4	8	3	1	3	Rain fell on the 6th, 12th, 28th, 29th, and 30th. Thunderstorm on the 6th.
...	3	3	4	2	1	1	7	7	Rain fell on the 2nd, 6th, 7th, 12th, 14th, 15th, 17th, 18th, 23rd, 28th, 29th, and 30th, and 1st December.
1·58	4	3	4	2	7	1	6	3	Rain fell on the 11th, 12th, 13th, and 30th.
1·27	7	8	0	3	1	2	1	2	Rain fell on the 7th, 8th, 15th, 18th, 23rd, 28th, 29th, and 30th.
3·25	2	1	11	0	0	2	8	2	Rain fell on the 6th, 11th, 13th, 14th, 29th, and 30th.
2·38	6	5	4	1	4	4	3	2	Rain fell on the 28th. Hot Winds on the 6th, 11th, 12th, 13th, 20th, 22nd, and 23rd. Lightning on the 5th.
2·88	9	2	0	3	4	3	2	6	
1·28	4	6	10	0	0	3	6	1	Rain fell on the 6th, 14th, 28th, 29th, and 30th. Lightning on the 6th, 16th, and 29th. Hot Winds on the 21st and 22nd.
1·89	6	0	1	1	4	1	2	4	Rain fell on the 6th, 11th, 13th, 17th, and 28th. Lightning on the 5th and 12th.
1·00	4	3	3	0	4	2	6	4	Rain fell on the 13th, 28th, 29th. Thunder on the 11th. Thunderstorm on the 13th.
...	9	3	0	0	0	3	4	9	Rain fell on the 2nd, 5th, 11th, 15th, 17th, 24th, 28th, 29th, and 30th. Thunderstorm on the 6th.
1·29	7	2	1	0	4	3	2	7	Rain fell on the 7th, 13th, 15th, 18th, 24th, 28th, and 30th. Thunder on the 7th, 24th, and 30th. Thunderstorm on the 29th. Lightning on the 17th and 30th.
...	2	3	0	0	13	0	3	10	Rain fell on the 2nd, 8th, 11th, 12th, 18th, 19th, 20th, 21st, 24th, 25th, 26th, and 27th.
4·90	5	2	4	1	5	2	4	7	Rain fell on the 2nd, 3rd, 6th, 8th, 11th, 12th, 18th, 19th, 20th, 21st, 25th, 26th, and 27th.
3·40	3	2	4	2	7	4	3	2	Rain fell on the 4th, 11th, 12th, 19th, 20th, 21st, 25th, and 26th. Hot Winds on the 3rd and 16th.
...	1	2	6	2	0	1	12	6	Rain fell on the 2nd, 3rd, 5th, 6th, 7th, 8th, 12th, 18th, 19th, 20th, 25th, and 27th.
3·58	7	1	2	5	6	0	5	4	Rain fell on the 3rd, 18th, 19th, 21st, 25th. Hot Winds on the 3rd, 14th, and 15th. Thunder on the 7th and 25th.
3·60	4	9	1	2	0	2	2	3	Rain fell on the 2nd, 3rd, 8th, 17th, 18th, 19th, 20th, and 21st.
4·24	3	1	9	1	0	1	10	1	Rain fell on the 7th, 9th, 18th, 19th, and 25th. Lightning on the 2nd and 26th.
3·03	6	6	3	2	4	4	4	1	Rain fell on the 3rd, 12th, 18th, 19th, 20th, 21st, 26th, and 27th.
5·84	11	1	2	2	3	2	4	5	
2·01	4	4	7	0	0	4	11	1	Rain fell on the 4th, 7th, 10th, 18th to 21st, 26th, and 27th. Lightning on the 2nd and 3rd.
4·13	8	0	1	1	5	1	1	1	Rain fell on the 11th, 18th, 21st, 25th, and 26th. Thunderstorms on the 3rd, 25th, and 26th. Lightning on the 2nd.
1·80	3	2	2	1	2	1	8	7	Rain fell on the 18th, 19th, 20th, and 25th. Hail on the 3rd. Lightning on the 12th. Hot Wind on the 3rd.
...	14	5	0	0	1	1	0	8	Rain fell on the 11th, 12th, 18th, 19th, 20th, 21st, 25th, and 27th.
4·07	4	4	3	3	2	3	3	4	Rain fell on the 3rd, 6th, 7th, 12th, 16th, 18th, 19th, 21st, and 25th. Thunder on the 3rd.

NOTES FOR THE MONTH OF DECEMBER.

Heathcote.—Thunderstorm on the 3rd, 26th, and 27th. Thunder only on the 18th. Lightning on the 2nd and 24th. Hot Wind on the 3rd. Solar Halo on the 11th, 13th, and 17th.

Beechworth.—Thunderstorm on the 3rd, 4th, 12th, and 24th. Thunder only on the 18th, 19th, and 30th. Lightning on the 15th.

Portland.—Thunderstorm on the 26th. Lunar Halo on the 11th. Hot Wind on the 31st.

Ballaarat.—Thunderstorm on the 2nd, 3rd, and 19th. Thunder only on the 11th.

Port Albert.—Thunderstorm on the 19th and 25th. Dew on the 10th and 31st. Aurora Australis in south, verging northward, on the 5th.

Camperdown.—Hail on the 26th. Thunder was heard on the 2nd, 3rd, and 12th. Lightning seen on the 2nd and 3rd. Thunderstorm on the 26th. Dew on the 4th, 6th, 11th, 14th, 24th, and 30th. Lunar Halo on the 17th.

Yan Yean.—Thunderstorm on the 19th and 26th. Lightning on the 2nd. Dew on the 15th. Hot Winds on the 2nd, 3rd, 15th, and 31st.

Warreneep.—Thunderstorm on the 19th.

Ararat.—Thunderstorm on the 2nd, 3rd, 24th, 25th, and 26th. Thunder only on the 11th. Lunar Rainbow on the 22nd. Hot Wind on the 14th.

STATIONS.	Mean Temperature	Maximum.		Minimum.		Mean Pressure of Air.	Maximum.		Minimum.		Mean Pressure of Vapor.
	Fahrenheit.	Date.	Temperature.	Date.	Temperature.		Date.	Pressure.	Date.	Pressure.	
JANUARY.	°		°		°	Inches.		Inches.		Inches.	Inches.
Ararat	73·1	...	...	...	...	...	12·9	...	26·4	...	...
Ballaarat	65·2	7·0	94·5	27·0	43·9	28·461	13·4	28·753	26·4	28·144	0·403
Beechworth	70·4	2·0	98·2	12·0	50·8	28·085	13·4 / 14·4	28·343	26·6	27·855	0·493
Camperdown ...	63·4	...	...	...	...	...	12·4 / 13·4	...	10·4	...	...
Castlemaine	64·9	8·0	102·4	13·0	44·0	28·890	14·6	29·212	11·4	28·668	0·512
Geelong	65·7	Dec. 31 / Jan. 21	96·0 / 96·0	26·0	45·0	29·873	13·4	30·210	26·9	29·522	0·478
Gipps Land, Port Albert	...	8·0	81·8	28·0	49·7	29·934	13·9	30·222	10·9	29·523	...
Heathcote	69·4	6·0	102·1	19·0	42·1	29·123	13·4	29·433	26·4	28·856	0·499
Melbourne	67·5	1·0	96·5	29·0	51·3	29·809	13·0	30·182	26·0	29·437	0·468
Portland	...	Dec. 31 / Jan. 14	98·6 / 92·6	27·0	43·2	29·908	13·4	30·280	10·4	29·590	...
Sandhurst	70·6	6·0	100·5	12·0	68·8	29·099	13·4	29·377	26·6	28·836	0·441
Warreneep	...	...	...	...	...	...	13·4	...	11·4	...	...
Yan Yean	...	1·0	101·0	28·0	44·5	...	...	...	...	...	...
FEBRUARY.											
Ararat	69·4	...	...	...	...	...	27·4	...	11·6	...	...
Ballaarat	62·9	6·0	100·1	27·0	36·2	28·455	22·4	28·710	11·6	27·869	0·327
Beechworth	69·5	7·0	102·0	24·0	46·4	28·081	4·9	28·376	22·9	27·758	0·502
Camperdown ...	61·8	6·6	94·5	...	...	...	27·4	...	11·6	...	...
Castlemaine	64·9	5·0	105·0	27·0	38·3	28·918	27·4	29·237	11·6	28·294	0·385
Geelong	64·4	5·0	106·5	26·0	43·5	29·858	27·4	30·092	11·6	29·222	0·582
Gipps Land, Port Albert	...	5·0	103·5	27·0	45·3	29·919	17·9	30·181	11·9	29·399	...
Heathcote	68·0	5·0	103·2	10·0 / 11·0	40·0	29·124	3·4	29·366	22·6	28·835	0·228
Melbourne	65·0	6·0	104·0	13·0	43·6	29·808	27·0	30·101	11·0	29·170	0·411
Portland	...	5·0	102·1	26·0	41·0	29·907	27·4	30·214	11·6	29·348	...
Sandhurst	...	...	...	...	...	...	...	...	...	...	...
Warreneep	...	...	...	...	...	...	2·6	...	11·6	...	...
Benalla	...	...	...	...	...	...	Feb. 1·4	...	10·6	...	...
Yan Yean	...	...	...	27·0	42·1	...	...	...	...	...	...

NOTES FOR THE MONTH OF JANUARY.

Beechworth.—Sheet Lightning on the 5th. Hot Wind on the 6th. Thunder and Lightning on the 7th, 9th, 10th, and 17th.

Portland.—Thunder and Lightning on the 24th and 25th.

Port Albert.—Dew on the 18th.

Camperdown.—Thunder was heard on the 8th, 9th, 24th, and 25th. Lightning was seen on the 24th. Thunderstorm occurred on the 16th and 23rd.

Sandhurst.—Thunder and Lightning on the 7th, 8th, and 16th. Sheet Lightning on the 7th, 8th, 9th, 16th, 23rd, and 24th.

Castlemaine.—Hot Winds on the 14th, 15th, and 24th. Thunder was heard on the 23rd.

Heathcote.—Distant Thunder on the 8th, 9th, and 16th. Solar Halos on the 1st and 2nd.

Ballaarat.—Hot Wind on the 1st. Thunderstorm on the 9th, 16th, 23rd, and 26th. Sheet Lightning on the 22nd, 24th, and 25th.

Yan Yean.—Rain fell on the 7th, 9th, 10th, 15th, 16th, 17th, 19th, 25th, and 26th. Hot Winds on the 1st and 22nd. Thunder on the 7th, 22nd, and 28th. Thunder and Lightning on the 9th, 16th, and 17th.

THE MONTHS OF JANUARY AND FEBRUARY, 1859.

Amount of Rain.	Number of Days on which the Wind blew from								Remarks.
	S.	S.E.	E.	N.E.	N.	N.W.	W.	S.W.	
Inches.									
...	...	...	...	...	...	...	...	...	Rain fell on the 9th, 10th, 11th, 15th, 24th, 25th, 26th, and 29th. Hot Wind on the 1st. Thunder and Lightning on the 16th, 23rd, 24th, 25th, and 26th. Lunar Halo on the 22nd.
...	7	9	2	0	7	3	0	3	Rain fell on the 9th, 10th, 11th, 15th, 16th, 17th, 19th, 23rd, 24th, 25th, 26th, 29th, and 30th.
3·51	3	4	3	2	7	4	1	1	Rain fell on the 7th, 8th, 9th, 10th, 15th, 16th, 17th, 18th, 23rd, 25th, 26th, and 30th.
...	2	6	6	1	0	2	5	6	Rain fell on the 7th, 9th, 10th, 16th, 18th, 19th, 23rd, 24th, 25th, 26th, 29th, and 30th. Hail on the 23rd.
...	4	4	4	3	6	1	5	2	Rain fell on the 7th, 10th, 11th, 25th, and 26th. Thunderstorm on the 7th.
1·60	3	9	1	5	2	2	3	4	Rain fell on the 16th, 25th, 26th, and 29th. Hot Winds on the 15th and 16th.
...	3	2	12	0	0	1	6	3	Rain fell on the 10th, 16th, 17th, 19th, 22nd, 23rd, 24th, and 25th. Thunderstorms on the 7th, 9th, 16th, 17th, 22nd, and 23rd.
3·665	5	9	2	2	4	3	3	1	Rain fell on the 7th, 9th, 10th, 15th, 16th, 17th, 22nd, 25th, and 26th. Thunder and Lightning on the 7th, 9th, 16th, 17th, and 22nd.
2·58	13	2	1	3	4	1	2	4	
1·17	5	3	15	0	2	1	2	1	Rain fell on the 9th, 10th, 17th, 18th, 25th, 26th, and 29th. Hot Winds on the 1st, 15th, and 16th.
3·72	11	1	2	0	5	1	1	1	Rain fell on the 7th, 8th, 15th, 16th, 25th, and 26th. Hot Wind on the 1st.
...	...	...	...	...	...	...	...	...	Rain fell on the 9th, 10th, 15th, 16th, 19th, 23rd, 26th, and 29th. Hail on the 9th. Thunder and Lightning on the 9th and 23rd. Vivid Lightning on the 24th.
2·12	7	1	0	0	3	4	2	7	
...	...	...	...	...	...	...	...	...	Rain fell on the 9th, 11th, 12th, and 15th. Hot Wind on the 6th. Lightning on the 19th.
0·74	8	3	2	0	5	3	1	6	Rain fell on the 9th, 11th, 12th, 26th, 23rd, and 25th, and 1st March.
0·73	7	0	3	2	4	2	3	3	Rain fell on the 22nd. Thunder was heard on the 21st. Dew on the 24th. Bush fires on the 4th.
...	4	1	4	1	1	3	7	6	Rain fell on the 9th, 11th, 12th, 14th, 15th, 16th, 21st, 25th, 26th, and 1st March.
...	8	0	1	1	7	2	4	4	Rain fell on the 11th, 20th, 22nd, and 23rd. Hot Winds on the 6th and 20th, and 1st March.
0·30	3	6	2	1	0	4	3	3	Rain fell on the 15th. Hot Wind on the 6th.
1·96	1	1	8	0	0	2	12	1	Rain fell on the 9th, 11th, 17th, 23rd, and 25th. Dew on the 2nd, 6th, and 20th, and 1st March.
0·65	8	4	2	2	1	6	3	2	Rain fell on the 9th, 11th, 22nd, and 23rd. Hot Wind on the 20th.
0·746	12	3	1	2	4	1	3	4	
1·42	6	3	6	0	1	3	7	2	Rain fell on the 9th, 11th, 12th, 14th, 15th, and 22nd. Hot Winds on the 3rd, 6th, and 19th.
...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	Rain fell on the 6th, 9th, 11th, 15th, 20th, 22nd, 23rd, and 25th. Dew on the 21st.
...	3	1	1	0	0	2	1	2	Rain fell on the 11th, 20th, 21st, 22nd, and 23rd. Thunder on the 20th, 21st, and 22nd.
0·89	9	2	0	0	5	2	1	3	

NOTES FOR THE MONTH OF FEBRUARY.

Portland.—Lunar Halos on the 10th and 19th.

Port Albert.—Hot Wind on the 6th. Lunar Rainbow on the 11th. Thunder and Lightning on the 20th.

Camperdown.—Thunder was heard on the 21st. Fog occurred on the 25th. Hot Winds on the 6th and 20th.

Castlemaine.—Fog on the 6th. Thunder on the 20th.

Heathcote.—Thunder and Lightning on the 20th. Solar Halos on the 3rd and 13th. Lunar Halos on the 12th and 18th.

Ballaarat.—Hot Wind on the 6th. Frost on the 10th. Lightning on the 20th and 21st.

Van Yean.—Rain fell on the 9th, 11th, 12th, 22nd, and 23rd, to the amount of 0·89 inch. Hot Winds on the 3rd, 4th, 19th, and 28th. Hailstorm on the 23rd. Thunder on the 20th.

XV.—COMPARATIVE TABLES.

132. MEAN TEMPERATURE OF AIR.

MONTH.	BALLAARAT.	BEECHWORTH.	CASTLEMAINE.	CAMPERDOWN.	GEELONG.	HEATHCOTE.	MELBOURNE.	PORTLAND.	SANDHURST.
1858.	°	°	°	°	°	°	°	°	°
March—May	56·1	60·2	59·9	56·5	58·8	59·7	59·5	58·2	60·2
June—August ...	44·4	44·1	46·0	45·7	48·7	45·2	48·9	...	45·6
September—November...	54·2	57·2	57·2	54·3	56·4	58·6	57·5	...	59·5
1859.									
December—February ...	63·1	69·0	66·7	62·3	63·9	68·1	65·3	...	69·3

The mean temperature of air for the year at the various stations in the different months is as follows:—

	Degrees.
Ballaarat	54·5
Camperdown	54·7
Geelong	57·0
Castlemaine	57·5
Beechworth	57·6
Melbourne	57·8
Heathcote	57·9
Sandhurst	58·7

133. MONTHLY MEANS IN THE DAILY RANGE OF TEMPERATURE OF AIR.

STATIONS.	1858.										1859.	
	MARCH.	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPTEMBER.	OCTOBER.	NOVEMBER.	DECEMBER.	JANUARY.	FEBRUARY.
	°	°	°	°	°	°	°	°	°	°	°	°
Ballaarat ...	25·3	21·8	13·3	14·1	12·4	14·0	15·1	22·9	25·9	25·2	24·2	25·0
Beechworth ...	39·7	24·1	18·4	16·0	14·1	15·1	17·4	23·4	23·3	23·2	23·0	23·0
Castlemaine ...	32·2	27·6	22·0	20·6	19·1	19·5	20·2	28·3	29·0	30·8	29·0	30·2
Geelong ...	26·2	22·4	15·2	16·7	15·6	16·5	18·6	22·0	23·0	24·8	21·6	24·9
Heathcote ...	30·1	28·2	18·7	19·1	17·3	18·1	20·0	28·7	29·5	25·3	25·3	30·0
Melbourne ...	21·3	18·6	14·9	15·0	11·7	15·4	16·1	21·2	21·9	22·0	19·7	22·1
Portland ...	17·1	14·9	14·1	13·7	13·8	...	16·0	19·1	16·4	16·5	16·7	18·4
Port Albert ...	...	...	...	...	...	15·9	15·8	19·1	17·4	19·2	19·3	19·2
Sandhurst ...	18·3	12·5	13·7	14·7	14·4	15·4	18·2	25·0	26·5	26·1	22·4	...

The yearly means of the daily range in temperature of air have been derived from the foregoing table, and are as follow:—

	Degrees.
Portland	16·1
Melbourne	18·3
Sandhurst	18·8
Ballaarat	19·9
Geelong	20·6
Beechworth	21·7
Heathcote	24·2
Castlemaine	25·7

134. RELATIVE HUMIDITY.

MONTH.	BALLAARAT.	BEECHWORTH.	CASTLEMAINE.	GEELONG.	HEATHCOTE.	MELBOURNE.	PORTLAND.	SANDHURST.
1858.	(0—1)	(0—1)	(0—1)	(0—1)	(0—1)	(0—1)	(0—1)	(0—1)
March—May	0·758	0·618	0·683	0·731	0·685	0·756	0·745	0·714
June—August	0·808	0·772	0·799	0·771	0·814	0·851	0·833	0·793
September—November ...	0·646	0·678	0·708	0·655	0·684	0·733	...	0·555
December—February ...	0·619	0·610	0·633	0·695	0·611	0·673	...	0·571

MEAN RELATIVE HUMIDITY FOR THE YEAR.

Sandhurst	0·658
Beechworth	0·669
Heathcote	0·699
Castlemaine	0·706
Ballaarat	0·708
Geelong	0·713
Melbourne	0·753

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135. MONTHLY MEAN OF PRESSURE OF AIR FOR THE VARIOUS STATIONS.

MONTH.	PORT ALBERT.	PORTLAND.	GEELONG.	SANDHURST.	HEATHCOTE.	CASTLEMAINE.	BALLAARAT.	BEECHWORTH.
1858.								
March	...	30·024	29·990	29·331	29·253	29·078	28·604	28·211
April	...	30·132	30·069	29·419	29·346	29·127	28·648	28·262
May	...	29·992	29·961	29·282	29·248	28·962	28·540	28·177
June	...	30·090	30·071	29·354	29·377	29·120	28·654	28·281
July	...	30·015	29·966	29·254	29·261	29·042	28·536	28·194
August	29·865	29·853	29·829	29·103	29·129	28·977	28·433	28·066
September... ...	29·692	29·884	29·837	29·100	29·125	28·888	28·409	28·054
October	30·050	30·016	29·967	29·220	29·251	29·037	28·553	28·173
November	29·963	29·963	29·893	29·124	29·153	28·951	28·464	28·102
December	29·887	29·835	29·788	29·045	29·061	28·683	28·382	28·019
1859.								
January	29·934	29·908	29·873	29·099	29·123	28·890	28·461	28·085
February	29·919	29·907	29·858	...	29·124	28·917	28·455	28·081

The yearly mean pressure of air is as follows :—

	Inches.
Portland	29·968
Geelong	29·925
Melbourne	29·881
Heathcote	29·204
Castlemaine	28·973
Ballaarat	28·512
Beechworth	28·142

136. MONTHLY RANGE IN PRESSURE OF AIR.

1858.	Ballaarat.	Beechworth.	Castlemaine.	Camperdown.	Geelong.	Heathcote.	Melbourne.	Portland.	Port Albert.	Sandhurst.
March ...	0·566	0·752	0·717	...	0·597	0·574	0·621	0·501	...	0·556
April ...	0·685	1·584	0·630	...	0·745	0·654	0·755	0·679	...	0·595
May ...	0·864	0·708	0·553	...	0·933	0·863	0·905	1·062	...	0·659
June ...	0·761	0·722	0·800	...	0·751	0·771	0·852	0·850	...	0·775
July ...	0·670	0·648	0·657	...	0·842	0·738	0·834	0·834	...	0·655
August ...	0·727	0·895	0·631	...	0·797	0·806	0·806	0·853	0·737	0·791
September ...	0·966	0·784	0·880	...	1·010	1·001	1·123	1·084	1·133	0·930
October ...	0·958	0·783	0·998	...	1·003	0·901	1·045	0·671	0·975	0·840
November ...	0·700	0·552	0·836	...	0·997	0·699	0·815	0·791	0·849	0·678
December ...	1·155	1·177	1·201	...	1·101	1·237	1·281	1·006	1·274	0·794
1859.										
January ...	0·609	0·488	0·544	...	0·688	0·577	0·745	0·690	0·699	0·541
February ...	0·841	0·618	0·943	...	0·870	0·531	0·931	0·866	0·782	...

The mean monthly range for the year is consequently as follows, commencing with the least range :—

	Inches.
Castlemaine	0·778
Heathcote	0·779
Ballaarat	0·791
Beechworth	0·808
Portland	0·824
Geelong	0·859
Melbourne	0·902

137. AMOUNT OF RAIN FOR THE SEVERAL STATIONS FOR EACH MONTH.

1858.	Ballaarat.	Beechworth.	Castlemaine.	Camperdown.	Geelong.	Heathcote.	Melbourne.	Portland.	Port Albert.	Sandhurst.
March ...	0·430	0·780	1·140	0·290	0·720	2·212	1·090*	1·310	...	2·300
April ...	1·020	1·850	0·610	1·245	0·490	1·857	0·541	0·880	...	2·400
May ...	3·110	2·720	2·950	2·747	1·340	1·476	1·249	2·090	...	1·660
June ...	1·390	3·050	1·520	2·140	1·130	1·595	0·687	3·570	...	1·840
July ...	2·540	2·250	2·340	4·040	2·290	2·258	1·870	5·390	4·085	3·320
August ...	2·300	4·870	1·300	4·900	1·910	2·085	1·457	3·640	3·110	1·770
September ...	3·260	3·170	1·730	4·405	2·300	2·055	1·960	3·560	2·840	1·480
October ...	0·750	1·650	0·210	1·270	0·410	0·280	0·784	0·980	1·190	0·140
November ...	2·070	3·000	1·700	1·800	1·370	2·380	2·881	1·320	3·480	1·890
December ...	4·560	3·220	3·460	2·305	3·500	3·270	5·842	1·970	2·010	4·130
1859.										
January ...	2·300	3·580	1·730	1·990	1·600	3·665	2·582	1·170	4·510	3·720
February ...	0·740	0·730	0·850	0·840	0·300	0·650	0·746	1·420	1·960	...

* This amount of rain was taken from the registers of the Observatory lately at the office of the Crown Lands.

This gives a yearly amount of rain :—

	Inches.
Geelong	17·360
Castlemaine	19·540
Melbourne	21·689
Heathcote	23·783
Ballaarat	24·470
Portland	27·300
Camperdown	27·972
Beechworth	30·870

138. MEAN AMOUNT OF CLOUD FOR EACH MONTH AT THE VARIOUS STATIONS.

1858.	Ballaarat.	Beechworth.	Castlemaine.	Camperdown.	Geelong.	Heathcote.	Melbourne.	Portland.	Port Albert.	Sandhurst.
March ...	3·72	3·07	2·85	3·20	4·77	3·13	4·77	5·42	...	2 70
April ...	4·92	3·48	3 42	6·57	6·05	3·72	6·02	5·99	...	2 60
May ...	5·87	4·19	3·57	6·10	4·95	5·54	4·92	6·33	...	3·35
June ...	5·61	4·47	3·61	5 76	5·41	4·63	5·43	5·96	...	3·46
July ...	7·73	6·83	3·60	6·77	5 82	6·63	6 48	6·60	4·46	6 07
August ...	6·13	5·42	3·38	6·45	5 63	4·95	6·52	6·50	3·95	3·72
September ...	7·40	6·10	4·48	6·75	6 00	5·32	6 70	6·03	5·50	3·85
October ...	4·97	3·85	2·47	5·70	5·45	4·32	5·73	5·60	5·23	3·05
November ...	5·40	4·00	2·63	6·23	5·57	4·07	5·75	5·50	5·29	3·30
December ...	4·78	3·78	2·47	5·27	4·90	3·65	5·07	5·03	4·87	1·62
1859.										
January ...	5·45	4·38	2·43	6·38	6·00	4·43	6·23	6·65	5·83	2·75
February ...	4·22	3·07	1·42	4·82	4·45	3·00	6·08	5·18	4·75	...

The yearly mean amount of cloud is consequently :—

Castlemaine	3·04
Beechworth	4·41
Heathcote	4·45
Geelong	5·42
Ballaarat	5·52
Melbourne	5·81
Camperdown	5·83
Portland	5·90

139. The observations on Ozone have been carried on at the country stations with Moffat's Ozonometer. The different series will be found somewhat imperfect; however, I subjoin the results and will only call to mind the fact, that Schönbein's test paper has been used at the Flagstaff Observatory.

MEAN AMOUNT OF OZONE.

1858.	Ballaarat.		Beechworth.		Castlemaine.		Camperdown.		Geelong.		Heathcote.		Melbourne.		Portland.		Port Albert.		Sandhurst.	
	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night.	Day.	Night	Day.	Night.	Day.	Night.
March ...	...	...	2·2	4·4	...	...	...	...	...	...	...	...	3·32	4·17	...	...	...	...	1·1	2·1
April ...	...	...	3·2	5·2	...	...	...	...	...	...	...	...	3·90	4·17	...	...	...	...	2·4	4·2
May ...	...	...	5·8	7·7	...	...	...	...	...	...	...	...	3·98	3·75	...	...	...	...	5 2	7·3
June ...	5·5	5 7	5·9	7·7	...	...	...	...	3·1	3·3	...,	...	2·62	3 71	...	...	...	...	6·9	7·9
July ...	6·0	7·7	5·7	7·6	...	...	...	...	5·5	5·2	...	...	4·17	4·56	...	...	...	...	7·3	9·0
August ...	5·8	7·1	5·9	7·2	...	...	...	...	4·2	4·4	4·8	5·1	3 48	3·95	...	...	...	...	5·7	7·5
September ...	5·3	7·0	6·5	8·0	...	...	...	...	3·2	3·8	5·3	6·9	3·00	4 27	...	...	...	...	5·3	7·5
October ...	3·7	5·4	3·8	5 0	...	...	...	...	1·8	2·0	4·1	6·0	2·44	3 62	...	...	...	...	2·0	5 0
November ...	3·8	5·1	2·9	4·8	...	...	...	...	2·9	2·9	4·8	4·9	3·00	4·11	...	...	...	...	2 7	5·9
December ...	3·2	4·7	2 9	4·5	...	...	...	...	2·8	3·3	4·1	5·8	2·60	3·16	...	...	...	...	2·3	4·9
1859.																				
January ...	3·4	5·1	4·0	5 0	...	...	...	...	2 0	2·3	3·0	3 7	2·78	3·18	...	...	...	...	2·0	3·7
February ...	3 8	5·3	1·0	4 0	...	...	...	...	2·1	1 9	4·0	5·6	2·27	3·32	...	...	...	...	...	...
Means ...	...	...	4·17	5·95	...	...	...	...	...	...	...	...	3·12	3 83	...	...	...	...	...	...

XVI.—ELECTRICAL PHENOMENA.

140. MONTH OF MARCH, 1858.

Melbourne.—On the 12th, between 8h. and 9h. p.m., lightning was seen towards N.W. On the 13th lightning continued during the morning towards W. On the 14th lightning visible in the evening towards W. On the 25th, at 10h. p.m., lightning towards E.

Heathcote.—On the 12th, at 9h. 30m. p.m., frequent flashes of lightning.

Sandhurst.—On the 12th, at 9h. 30m. p.m., lightning.

Beechworth.—On the 1st, lightning. On the 9th, at 3h. p.m., thunder was heard towards W. On the 11th, at 8h. a.m., thunder was heard. On the 21st, at 9h. 30m. p.m., lightning was seen towards E. On the 26th at 4h. p.m. thunderstorm towards W. and S.W.

Ballaarat.—On the 12th, at 10h. p.m. lightning towards N.W.

Castlemaine.—On the 12th, lightning was seen during both day and night.

Camperdown.—A thunderstorm occurred on the 12th and 13th.

Kooyoora.—A thunderstorm on the 11th. On the 24th, at 5h. a.m., a thunderstorm.

Mount Egerton.—On the 12th, lightning visible towards W.

Ararat Plains.—On the 12th, a thunderstorm. On the 24th, a thunderstorm.

Mount Ararat.—On the 12th, a thunderstorm. On the 13th, a thunderstorm.

Welshpool.—On the 11th, a thunderstorm.

Tyntindyer.—A thunderstorm on the 23rd.

141. MONTH OF APRIL, 1858.

Melbourne.—On the 3rd, at 8h. p.m., lightning seen towards N. On the 11th, at 10h. p.m., lightning. On the 22nd, at 3h. p.m., a single clap of thunder, and lightning all the evening towards E. On the 27th, between 6h. 30m. and 10h. p.m., lightning was seen towards N.W. On the 28th, at 7h. and 8h. p.m., lightning towards S.

Note.—As the systematically registered observations on atmospheric electricity were only commenced on the 15th of this month, a summary of the extraordinary disturbances in this meteorological element can only be given for its latter portion.

On the morning of the 15th the electrical tension continued positive until 8h. a.m. when a sudden change took place and it became strongly negative, registering 10·45; this state continued until 3h. p.m., a strong breeze from N., which brought with it clouds of dust, blowing all the time, after which the tension changed to positive again. On the 22nd, 28th, 29th, and 30th, the electrical tension was very slight, the electrometer frequently registering 0.

Portland.—On the evening of the 27th, lightning towards N.N.E.

Beechworth.—On the 23rd, at 4h. p.m., thunder towards S.W. by S. On the 24th thunder was heard towards N. and N.W.

Ballaarat.—On the 11th, at 3h. 45m. p.m., thunder towards N.W. On the 22nd, at 7h. p.m., lightning seen towards N.N.W.

Castlemaine.—On the afternoon of the 28th, a thunderstorm.

Camperdown.—On the 27th, a thunderstorm towards S.

Ararat.—On the afternoon of the 27th and of the 28th, a thunderstorm.

Mount Ararat.—On the 15th, at 2h. p.m., a thunderstorm. On the 27th, at 4h. p.m., a thunderstorm. On the afternoon of the 28th, a thunderstorm.

142. MONTH OF MAY, 1858.

Melbourne.—The positive electrical tension was remarkably slight on the 4th, 8th, and 14th, and somewhat higher, though still low, on the 3rd, 13th, and 28th. The negative electricity was high during a gale of wind, accompanied with masses of dust, which blew from the N., on the 6th. On the 6th, at 3h. p.m., flashes of lightning, with thunder, were observed; the lightning continued throughout the evening towards N.N.E. On the 16th, lightning during the whole evening towards W.S.W. and N.W. On the evening of the 17th, frequent flashes of lightning towards S.S.W. and S.E., their direction gradually moving towards E.

Heathcote.—On the 7th, from 2h. 30m. to 3h. 30m. p.m., thunder and lightning, accompanying a heavy squall. On the 17th, at 9h. 30m. p.m., sheet lightning.

Portland.—On the 16th, thunder and lightning throughout the afternoon and evening.

Sandhurst.—On the 6th, between 1h. and 2h. p.m., a thunderstorm. On the 16th, at 5h. p.m., distant thunder. On the 17th, at 9h. 30m. p.m., sheet lightning towards E.

Beechworth.—On the 6th, at 5h. 30m. p.m., a thunderstorm and heavy fall of rain. On the 16th, at 8h. 30m. p.m., a thunderstorm.

Camperdown.—On the 5th, at 9h. 30m. p.m., lightning seen towards W. On the evening of the 16th, lightning towards W.

Ararat.—On the 6th, a thunderstorm. On the 16th, a thunderstorm. On the evening of the 17th, lightning seen towards E.

Mount Ararat.—On the 7th, a thunderstorm at midnight. On the 16th, a thunderstorm in the afternoon.

Welshpool.—On the 16th, at 9h. 30m. p.m., forked lightning.

Swan Hill.—On the 31st, a thunderstorm.

143. MONTH OF JUNE, 1858.

Melbourne.—On the 7th of this month the positive electrical tension was exceedingly small, and remained so, with slight undulations, until the 12th, when it increased, and became comparatively high. On the 27th another minimum occurred, while the greatest positive tension was indicated by the observations made on the 23rd. During the entire month no lightning was seen, nor was thunder or lightning reported from any part of the country.

144. MONTH OF JULY, 1858.

Melbourne.—The positive electrical tension was very high at the commencement of the month, but it gradually decreased towards the middle, and reached its minimum value on the 14th. The frequent and sudden changes from a high to a comparatively low state of tension were among the remarkable phenomena of the month. Throughout the evening of the 11th, lightning was seen first in S., then in S.E., E. by S., and at $11^{h.}$ p.m. in E. On the 12th, the discharge of electric fluid above mentioned continued until $2^{h.}$ a.m. On the 14th, at $9^{h.}$ p.m., lightning towards W.

Geelong.—Lightning was seen on the 14th and 15th.

Heathcote.—On the 11th, lightning.

Portland.—Lightning was seen on the 14th and 15th.

Camperdown.—On the 14th, lightning was seen in the evening.

Port Albert.—A thunderstorm occurred on the 11th.

145. MONTH OF AUGUST, 1858.

Melbourne.—In this, as in the preceding month, the positive tension was high at its commencement, decreasing gradually towards the 10th, from which date the registrations continued low until the 15th and 16th. During the latter part of the month the daily means were subjected to undulations, showing minima on the 19th 20th, 21st, and 23rd, and maxima on the 4th, 25th, and 26th. On the 24th, at $1^{h.}$ $53^{m.}$ p.m., distant thunder and lightning towards N.N.E.; lightning continued throughout the evening, first towards S. by E., then S.S.E. and S.E. At 9^{h} $15^{m.}$ p.m. a reddish flash of lightning, of a globular form, was seen towards S. by E., and at $9^{h.}$ $45^{m.}$ a similar one in S.E. by S. On the 27th frequent flashes of lightning were seen during the evening, chiefly towards S.W. At $8^{h.}$ $15^{m.}$ p.m. a reddish globe-shaped flash was seen near the horizon, towards W. At $11^{h.}$ p.m. the sky became very dark, and at midnight one appalling clap of thunder was heard, causing the windows to rattle; it was accompanied with rain in heavy drops. On the morning of the 28th, at $6^{h.}$, lightning was seen towards S. by E.

Geelong.—On the morning of the 28th, at $12^{h.}$ $15^{m.}$, a very violent clap of thunder was heard, preceded by a splendid flash of lightning.

Beechworth.—On the 19th, at $3^{h.}$ $30^{m.}$ p.m., a thunderstorm. On the 24th, at $3^{h.}$ $45^{m.}$ p.m., a thunderstorm.

Camperdown.—On the 1st, a thunderstorm occurred. On the 24th, a thunderstorm.

Port Albert.—On the 29th, a thunderstorm.

It is a circumstance worthy of being placed on record, that the peculiar description of lightning above referred to (globe lightning) was observed in various parts of the country, and of the Indian Ocean, during the month of August and the first part of September, as will be seen from the subjoined extracts from ships' logs:—

The Prussian ship *Johanna Wagener* was struck by lightning at $4^{h.}$ $20^{m.}$ a.m., in long. 111° 31′ E., and lat. 39° 29′ S. The lightning was seen to descend in a globular form, and was accompanied by a very heavy clap of thunder. As the ship was provided with a lightning conductor it did not receive any material damage.

From the English ship *Conflict* a very bright flash of globe lightning was seen, on September 3rd, in long. 103° E. and lat. 42° S.

"A splendid meteor accompanied with thunder," which was seen in New South Wales on the 8th of August, at $3^{h.}$ p.m., should also be cited here as an additional fact tending to establish the frequency and general distribution, during the periods above referred to, of what M. Arago calls "globe lightning."

146. MONTH OF SEPTEMBER, 1858.

Melbourne.—In the period from the 4th to the 16th of this month the positive electrical tension was considerably depressed, as also from the 18th to the 28th; the first and latter days of the month, and the 17th, are characterised as maxima. The smallest mean daily tension fell on the 27th, and the highest on the 17th. The greatest disturbance occurred during a northerly gale on the 21st and 22nd, on which days the electrical tension frequently changed from ∞ negative to positive, and *vice versa*. On the 13th, at midnight, lightning towards E. On the 14th, at $10^{h.}$ p.m., lightning towards S.W. On the 19th, at $11^{h.}$ p.m., distant thunder. On the 20th, at $10^{h.}$ $20^{m.}$ p.m., a red flash of lightning close to the horizon (probably globe lightning). On the 22nd, during the evening, lightning was seen in S.S.W. and S.W. On the 24th, in the evening, lightning was seen towards S.E.

Heathcote.—On the 19th and 20th, lightning towards E.

Beechworth.—On the 9th, a thunderstorm at $6^{h.}$ p.m., accompanied by a heavy fall of hail. On the 20th, a thunderstorm. On the 24th, a $2^{h.}$ $30^{m.}$ p.m., thunder, accompanied by a hailstorm.

Portland.—On the 14th, 15th, and 23rd, thunderstorms.

Camperdown.—On the 23rd and 24th, thunderstorms.

147. MONTH OF OCTOBER, 1858.

Melbourne.—The daily means deduced from observations on positive electrical tension were subjected to oscillations of considerable magnitude during this month; the extremes being on the 16th (minimum), and on the 22nd (maximum). On the 8th, 15th, 16th, 17th, 18th and 25th, the electrometer indicated severe disturbances, negative electricity in excess (∞) being frequently registered on the latter day; while on the 30th the total absence of atmospheric electricity was often recorded. On the 8th the electric tension was much disturbed throughout the whole day, and at $1^{h.}$ $30^{m.}$ p.m. a thunderstorm occurred. Mr. W. Wills (one of the assistants at the Observatory) was in the vicinity of a post in North Melbourne, when it was struck by the last discharge of electric fluid which took place; the post, which extended about eight feet above the ground, was thrown to a considerable height, the lower part of it being burned and shattered to pieces. On examining the hole in the ground from which the post was propelled smoke was found to issue from it, and a sulphurous smell was perceptible. About thirty feet from the spot where this occurrence took place several high buildings and a short iron fence were situated. On the 12th, lightning was seen towards E.

Heathcote.—Thunderstorms occurred on the 8th and 25th.

Sandhurst.—On the 25th, a thunderstorm.

Portland.—Thunderstorms on the 15th and 16th.

Beechworth.—On the 15th, lightning was seen.

148. MONTH OF NOVEMBER, 1858.

Melbourne.—The greatest mean tension occurred on the 13th and 14th, and a secondary maximum in the mean value of atmospheric electricity fell on the 26th, while the minimum mean tension for the month, deduced from the observations made on the 21st, was 1·28. On the 6th, at $8^{h.}$ p.m., a thunderstorm passed from W. to E.; some of the flashes were very vivid, and heavy squalls from the N. were accompanied with showers of rain. On the 7th, between midnight and $3^{h.}$ a.m., frequent flashes of lightning were observed in the directions S., S.S.E., S.E., and N.E. On the 11th, at $5^{h.}$ p.m., distant lightning, accompanied with thunder, is recorded. On the 12th, frequent flashes of lightning were seen in N.N.E. and N.N.W. On the 13th, in the morning, lightning was many

times seen towards S.W., and distant thunder was heard at $7^{h.}$ a.m. On the 16th, during the evening, flashes of lightning were seen towards S.W. On the morning of the 17th a thunderstorm burst over the city. On the 23rd, at 10 p.m., distant thunder was heard towards N.W. On the 29th, thunder was heard throughout the whole afternoon, and at $9^{h.}$ a heavy thunderstorm was recorded. On the 30th, a thunderstorm at $6^{h.}$ p.m.

Geelong.—A thunderstorm occurred on the 11th.

Heathcote.—Lightning was seen on the 5th, 6th, 11th, 12th, 13th, 17th, 29th, and 30th; and on the 6th, at $2^{h.}$ $30^{m.}$ p.m., a thunderstorm passed over the locality.

Portland.—Lightning was seen on the 6th, 16th, and 29th.

Sandhurst.—On the 5th and 12th lightning was observed, as also a thunderstorm on the 6th and 29th.

Beechworth.—On the 6th, a thunderstorm burst over the township, which lasted nearly the whole of the afternoon.

Ballaarat.—A thunderstorm took place on the 6th, and on the 23rd; and lightning was seen on the 29th.

Castlemaine.—Thunderstorms were recorded on the 6th, 11th, and 12th.

Camperdown.—On the 11th, 17th, and 29th, thunderstorms; lightning also was observed on the 6th.

Port Albert.—Thunderstorms on the 6th, 11th, and 17th; and lightning on the 29th.

149. MONTH OF DECEMBER, 1858.

Melbourne.—The daily mean values of positive electrical tension were subjected to violent oscillations throughout this month, giving rise to several maxima and minima; the primary maximum fell on the 13th, while the primary minimum took place on the 26th. On the latter occasion the mean value for the day was as low as 0·53. On the 2nd, lightning during the evening. On the 3rd, lightning in the morning, thunder in the afternoon, and in the evening a very remarkable thunderstorm occurred; the discharges, which followed each other with great rapidity, took place in every possible direction, and often appeared to be very near; they were accompanied with very little thunder or rain, not one loud clap was heard. The clouds, which came up rapidly from N.W., continued to emit the most vivid flashes from the time they were first seen on the N. horizon until they disappeared in the S. The thunder was strikingly low, so that it was difficult to connect any single flash with the peal which followed it. At $10^{h.}$ $3^{m.}$ p.m., from 10° to 15° to the W. of the zenith, a discharge of a very peculiar character was observed: it originated in a dark cloud, and the emanation was from one point, towards every direction, the flash assuming for the moment the appearance of a network or star of fine lines 6° or 7° in diameter, of a violet color, as if they were seen through the cloud; no thunderclap followed this display, but at the same moment the flash was seen a distinct noise was heard as if water under great pressure was forced through the air. (The wires of the electric telegraph were 140 feet distant from the place of observation.) On the 4th, the thunderstorm above described continued until $4^{h.}$ a.m. On the 19th, a very heavy thunderstorm was followed by an immense fall of rain and a furious gale from S.W. Lightning was first visible at $2^{h.}$ $18^{m.}$ p.m. The wind blew at first gently from E., at $2^{h.}$ $40^{m.}$ it shifted to W.; at $2^{h.}$ $50^{m.}$ it went back again to E., and came then round by S, very slowly and steadily to N.N.W., its force gradually increasing. The pressure of air was on the decrease until $5^{h.}$ $10^{m.}$ p.m., at which time it attained its minimum of 28·872 inches; after this the wind shifting to S.W. caused the pressure to increase. On the 24th, frequent lightning towards N., at and after midnight; a splendid Aurora Australis was visible simultaneously. On the morning of the 25th, distant thunder was heard. On the 26th, frequent flashes of lightning were visible in the W., at $8^{h.}$ p.m.; at $10^{h.}$ $30^{m.}$ the discharges, accompanied with thunder, approached much nearer, the wind shifting at the same time to N.N.W. and bringing with it heavy showers of rain. The most serious portion of the storm lasted until 11h. 15m. p.m., during which time the wind gradually changed its direction to W.S.W. On the 27th, thunder and lightning continued during the early morning until daybreak. On the 28th, a thunderstorm passed towards N.E. at $3^{h.}$ a.m.

Geelong.—On the 5th, forked lightning was seen.

Heathcote.—Thunder and lightning was observed on the 2nd, 3rd, 24th, 25th, and 26th.

Portland.—A thunderstorm occurred on the 26th, and lightning was seen on the 2nd and 3rd.

Sandhurst.—Lightning was seen on the 2nd, and thunderstorms were recorded on the 3rd, 25th, and 26th.

Beechworth.—Heavy thunderstorms on the 15th, 19th, 24th, 25th, and 26th.

Ballaarat.—Thunderstorms occurred on the 2nd, 3rd, 11th 12th, and 19th.

Castlemaine.—Thunderstorms took place on the 7th and 25th.

Camperdown.—Thunderstorms noted on the 2nd, 3rd, 12th, and 26th.

Port Albert.—Lightning was seen on the 2nd and 26th, and thunderstorms were registered on the 19th and 25th.

150. MONTH OF JANUARY, 1859.

Melbourne.—At the beginning and end of the month, the electrical tension was comparatively high; the maximum of the daily means occurred on the 27th and 28th, and the minimum on the 16th, the former being 4·64, and the latter 0·58. On the 8th, at $3^{h.}$ p.m., thunder was heard towards N. On the 9th, at $12^{h.}$ $20^{m.}$ p.m., thunder was heard towards N.W., and in the evening towards E. On the 16th, in the evening, frequent flashes of lightning were seen towards W. and S.W. On the 17th, during the early morning, lightning was seen and thunder heard towards N.E. On the 22nd, several flashes of lightning towards S.E. by S. On the 23rd, throughout the morning, lightning was in W.S.W. and S. by E., and thunder was heard at $8^{h.}$ a.m. On the 24th, lightning during the whole evening, towards N.W. and S. On the 26th, a thunderstorm passed towards N. at noon.

Heathcote.—Thunder on the 8th, 9th, and 16th.

Portland.—Thunder and lightning on the 24th and 25th. Lightning was seen on the 24th, and a thunderstorm occurred on the 16th, and on the 23rd.

Sandhurst.—Thunder was heard on the 7th, 8th, and 16th, and sheet lightning was seen on the 7th, 8th, 9th, 16th, 23rd, and 24th.

Beechworth.—Lightning on the 5th. Thunder and lightning on the 7th, 9th, 10th, and 17th.

Ballaarat.—Thunderstorms on the 1st, 7th, 9th, 16th, 17th, 22nd, and 28th; and sheet lightning was seen on the 23rd.

Castlemaine.—A thunderstorm on the 23rd.

Camperdown.—Thunder was heard on the 8th, 9th, 24th, and 25th.

151. MONTH OF FEBRUARY, 1859.

Melbourne.—Only a slight positive electrical tension manifested itself during the first part of this month, from the 2nd to the 9th; the mean value then increased, and remained comparatively high for the remainder of the month, although subject to great oscillations. The maximum value in the daily means was obtained on the 22nd, and the minimum on the 3rd; the former amounted to 3·95, and the latter to 0·55. On the 9th, two distant claps of thunder were heard, at $3^{h.}$ $35^{m.}$ p.m. On the 20th, between $7^{h.}$ and $8^{h.}$ p.m., lightning was seen towards N.W. On the 21st, at $3^{h.}$ a.m., thunder and lightning towards W. and N.

Heathcote.—Thunder and lightning on the 20th.

Ballaarat.—Lightning on the 20th and 21st.

Camperdown.—Thunder was heard on the 21st.

Castlemaine.—Thunder on the 20th.

Port Albert.—Thunder and lightning on the 20th.

Yan Yean.—Thunder on the 20th.

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152. The following table contains the mean positive electric tension, calculated for each month; also, the number of negative and naught registrations made, the number of days on which thunderstorms were recorded, and the number on which lightning only was observed, at the Flagstaff Observatory, Melbourne:—

MONTH.	Mean Positive Electric Tension.	Number of Hours of		Number of Days of	
		Negative.	0	Thunderstorms.	Lightning only.
1858.					
March	...	...	...	0	5
April	...	...	...	1	4
May	2·70	20	75	1	2
June	3·27	15	46	0	0
July	2·53	14	99	0	3
August	2·79	25	60	2	1
September	3·01	40	47	1	5
October	2·93	65	68	1	1
November	2·42	48	107	6	3
December	3·12	69	70	7	2
1859.					
January	2·73	53	81	5	2
February	2·67	76	77	2	1

NAVIGATION.

I.—INTRODUCTION.

153. One of the first steps taken, when the labors of the Observatory were in a fair state of organization, was an arrangement for advancing the interest of Navigation. The chief points in view being the collection of ships' logs, for the purpose of extracting therefrom facts, which might be made available for developing our theories on the principal meteorological questions and their systematic examination, according to a plan adopted for the advancement of our knowledge on the Currents of the Ocean and Atmosphere; and lastly, the assistance which an observatory might render to masters of ships, by giving an opportunity of having their instruments corrected, and information supplied on the scientific portions of Navigation.

154. How evident soever the advantages of such an institute may be to the advancement of Navigation, the difficulties we had to contend with were by no means insignificant, and it was only after a considerable time that nautical men became aware of the existence of the institution as a depository for scientific information.

I am happy to say that before the close of the first twelve months of the working of the Observatory, the appreciation of its labors for the advancement of Navigation was general, and the single fact that upwards of 250 nautical men of all nations have visited the Observatory within the abovenamed period, is sufficient to prove such an appreciation.

155. With regard to the perusal of the logs, I must state in explanation:—Those logs that are kept according to Maury's principle or on the plan of the Board of Trade, are only extracted, and phenomena worthy of notice are used for the completion of the registers of the Observatory, whilst common logs are thoroughly copied and the results classified according to time and locality. For this purpose a register is kept, in which the facts are entered on the plan proposed and so successfully carried out by Lieutenant Maury, U.S.N., director of the Nautical Observatory of Washington. The number of logs thus registered during the year ending March the 1st, 1859, amounts to sixty-one. But it was not thought advisable to give the results derivable from these labors at present, as it would be of advantage that the observations should extend over a longer period of time; I hope I shall be able in my next yearly report to lay before the nautical public some satisfactory results. For the present I subjoin here some few extracts only, which are calculated to throw some light on the nature of storms and prevailing winds in some parts of the southern hemisphere. Besides these I have given copies of voyages in particularly interesting portions of the ocean, as well as some others that have not been entered in the registers above referred to.

156. A similar plan to that just described has been followed in arranging facts collected on the Australian coast and adjoining seas; but the manner in which these logs were usually kept made it almost impossible to derive reliable facts from them. I therefore resolved to introduce another method of registering nautical and meteorological observations, by means of an abstract log. But the want of good instruments for the purpose has greatly interfered with the entire success: I am happy to say that several gentlemen have been most willing in advancing meteorology, some by keeping a small abstract in accordance with the means at their disposal. From amongst them I take the opportunity to mention the names of two gentlemen here who have forwarded some valuable material for this first nautical report, viz., —— Gillfillan, Esq., master of the schooner *Yarra*, and —— Pole, Esq., master of the barque *Formosa*.

I hope that the example of these two gentlemen will be followed as soon as the necessary instruments and printed forms can be procured.

157. The observations published in the following extracts and copies have been made with instruments that have been compared with the Melbourne standard, and the corrections have been applied accordingly. Besides these, 117 instruments—Sextants, Barometers, Thermometers, and Chronometers—have been carefully examined, and corrections given; a matter that we must allow can scarcely be over-estimated, when we take into consideration that the value of observations so much depends on the condition of the instruments used. Great attention is paid to providing captains of ships with the errors of eccentricity and division of their sextants; and I would here remark that these two errors interfere more frequently with the value of observations than we should at first sight imagine, so much so that arrangements should be made in every seaport to furnish nautical men with these corrections, which are only to be ascertained, when at sea, with considerable trouble, and are therefore generally neglected, a practice which must greatly interfere with the value of observations on lunar distances.

158. Instruments that are out of order are repaired in the little workshop of the Observatory, and several barometers have been re-boiled and fitted again. All these things are done gratuitously, under the sole condition that the Observatory is to have the use of the respective logs, and that the captains are to keep abstracts, to be delivered up, either to this Observatory or to any other institute of a similar nature.

Many masters of ships have been supplied with ruled forms, and we may soon hope to hear of the use that has been made of them.

159. The following table contains summaries of voyages from Europe to this port, arranged in a manner that will greatly facilitate the comparison of the different routes through the North and South Atlantic and the Indian Ocean. With few exceptions these summaries start from 49° north latitude and 6° or 7° west longitude, and end with the day when the respective ships sighted Cape Otway. At the head of the table are figures showing the number of days that the ship was out, and in the corresponding square we see at once its position—the upper figure being the latitude and the lower the longitude. In order to indicate more distinctly the chief points in this voyage, the days of passing the equator and the meridian of Greenwich are marked by two parallel lines, and the meridian of the Cape by one only.

II.—FROM EUROPE TO MELBOURNE.

160. VOYAGES OF THIRTY-NINE SHIPS.

NAME OF SHIP.		NUMBER OF DAYS OUT.												
		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
No. 1. OCEAN CHIEF ... 19th August to 30th November.	Lat.	N.	49	47	46	45	44	42	42	42	38	35	32	30
	Long.	W.	...	9	10	11	13	14	14	16	16	17	20	21
No. 2. OCEAN CHIEF ... 31st January to 13th April.	Lat.	...	53	46	44	45	40	38	36	33	31	30	29	27
	Long.	...	9	13	15	16	18	18	17	17	17	19	20	21
No. 3. OCEAN CHIEF ... 16th June to 27th August.	Lat.	...	50	48	45	43	42	39	35	34	32	29	27	25
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 4. CES. GODEFFROY ... 30th December to 7th April.	Lat.	49	49	44	41	38	35	32	30	28	25	22	19	16
	Long.	8	11	13	15	16	18	19	19	20	22	23	25	27
No. 5. MARCO POLO ... 1st May to 31st July.	Lat.	...	48	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	12	...	...	...	...	...	...	...	...	...	...	...
No. 6. LA ROCHELLE ... 9th November to 26th January.	Lat.	49	47	43	40	38	35	33	30	27	23	19	16	13
	Long.	6	11	13	15	17	17	17	18	19	21	20	23	22
No. 7. CAROLINA ... 3rd January.	Lat.	49	50	48	46	44	41	39	37	34	32	29	28	25
	Long.	5	6	7	10	12	16	17	18	18	18	19	19	20
No. 8. CONFLICT ... 16th July to 2nd October.	Lat.	49	48	46	44	41	38	34	31	28	24	21	18	15
	Long.	7	10	12	14	16	18	19	21	22	24	26	27	27
No. 9. SIR WM. EYRE ... 14th July to 9th October.	Lat.	51	49	47	45	42	39	37	35	33	31	28	25	22
	Long.	7	8	11	14	17	19	21	22	23	24	24	24	25
No. 10. SIR WM. EYRE ... 14th May to 3rd August.	Lat.	49	47	44	40	38	35	31	29	27	25	23	21	19
	Long.	7	11	15	17	19	20	22	24	25	26	27	28	28
No. 11. CRIMEA ... 21st July to 29th October.	Lat.	49	46	44	40	37	34	32	30	27	25	23	20	18
	Long.	6	10	11	13	15	17	19	20	21	23	24	25	26
No. 12. TUISKO ... (from New York to Melbourne) 9th February to 19th May.	Lat.	40	37	38	37	38	37	37	35	35	36	36	37	37
	Long.	71	64	64	60	56	53	49	48	48	47	46	44	41
No. 13. SUSANNA ... 25th June to 11th October.	Lat.	49	47	45	45	44	43	42	42	42	41	40	39	38
	Long.	6	10	9	9	10	12	11	13	15	14	14	14	14
No. 14. PODESTA ... 17th August to 24th November.	Lat.	49	48	45	43	41	39	37	34	31	29	27	25	23
	Long.	7	8	11	12	14	15	16	17	19	20	21	22	23
No. 15. CESAR AND HELENE ... 10th August to 28th November.	Lat.	49	49	47	48	46	45	45	44	42	39	37	36	33
	Long.	5	7	7	8	9	10	12	13	13	15	16	18	18
No. 16. MANILLA ... 30th August to 27th November.	Lat.	49	48	47	45	43	42	41	39	37	35	32	30	28
	Long.	5	6	8	10	11	10	10	11	12	14	16	18	19
No. 17. MANILLA ... 27th August to 22nd November.	Lat.	49	46	45	43	41	39	36	34	31	28	26	23	20
	Long.	6	9	10	11	12	14	15	17	18	19	21	21	22
No. 18. LUDWIG HEYN... 6th September to 22nd December.	Lat.	49	47	46	43	40	38	36	34	32	30	27	24	21
	Long.	6	8	10	13	15	18	19	20	21	22	23	24	25
No. 19. HEDDA FRIDRIKA ... 14th September to 5th January.	Lat.	49	47	44	42	40	39	37	35	34	32	31	30	28
	Long.	8	11	13	14	15	16	16	17	18	19	20	20	21
No. 20. CHRISTIAN LOVEN ... 15th October to 23rd January.	Lat.	48	47	45	43	40	38	36	34	33	31	30	29	27
	Long.	7	9	11	13	15	16	17	18	18	19	19	20	22

VOYAGES FROM EUROPE TO MELBOURNE—*continued.*

NAME OF SHIP.		NUMBER OF DAYS OUT.												
		14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.
No. 1. OCEAN CHIEF ... 19th August to 30th November.	Lat.	27	21	20	18	15	13	12	11	8	0	7 S.	5	4
	Long.	22	23	25	26	26	27	26	27	24	23	21	20	24
No. 2. OCEAN CHIEF ... 31st January to 13th April.	Lat.	25	24	20	18	14	10	8	6	4	1	0 N.	2 S.	5
	Long.	23	23	26	26	26	26	26	26	26	26	27	28	30
No. 3. OCEAN CHIEF ... 16th June to 27th August.	Lat.	22	18	15	12	9	...	6	...	5	2	1 S.	4	6
	Long.	26	...	...	...	...	...	...	...	...	...	...	...	...
No. 4. CES. GODEFFROY 30th December to 7th April.	Lat.	13	10	7	7	6	6	5	5	4	4	3	3	3
	Long.	25	24	23	23	23	23	23	22	22	21	21	22	23
No. 5. MARCO POLO ... 1st May to 31st July.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 6. LA ROCHELLE ... 9th November to 26th January.	Lat.	11	8	6	5	4	3	1	0° 7′ N.	3° S.	6	13	13	14
	Long.	24	24	24	25	25	26	26	27	28	29	30	31	31
No. 7. CAROLINA ... 3rd January.	Lat.	22	20	17	14	11	9	8	6	5	5	5	4	3
	Long.	21	23	25	26	24	25	23	23	23	22	22	21	20
No. 8. CONFLICT ... 16th July to 2nd October.	Lat.	12	10	9	9	9	8	6	7	5	4	1 N.	1 S.	4
	Long.	27	26	26	26	24	21	20	19	21	23	24	25	26
No. 9. SIR WM. EYRE 14th July to 9th October.	Lat.	19	16	13	11	10	9	9	9	8	9	8	6	6
	Long.	26	26	26	26	26	26	26	26	25	22	21	18	15
No. 10. SIR WM. EYRE 14th May to 3rd August.	Lat.	17	13	11	8	7	4	3	2 N.	0° 2′ S.	3	6	8	11
	Long.	27	27	26	25	26	23	24	25	27	29	32	32	33
No. 11. CRIMEA ... 21st July to 29th October.	Lat.	16	14	13	12	11	9	9	8	7	7	6	5	4
	Long.	27	27	26	26	26	26	25	25	24	22	23	24	25
No. 12. TUISKO ... (from New York to Melbourne) 9th February to 19th May.	Lat.	37	37	37	34	30	27	25	23	21	20	18	14	11
	Long.	39	38	35	33	29	27	26	25	25	25	26	26	25
No. 13. SUSANNA ... 25th June to 11th October.	Lat.	38	37	34	31	29	26	24	23	23	22	20	17	14
	Long.	16	16	17	19	20	21	22	22	22	23	24	25	26
No. 14. PODESTA ... 17th August to 24th November.	Lat.	22	19	18	18	15	13	12	10	8	8	7	7	6
	Long.	23	24	25	25	25	25	25	24	23	21	21	21	19
No. 15. CESAR AND HELENE 10th August to 28th November.	Lat.	30	28	26	24	22	20	19	18	17	16	15	13	12
	Long.	18	19	21	22	23	24	24	25	26	26	26	27	26
No. 16. MANILLA ... 30th August to 27th November.	Lat.	25	23	19	17	17	17	14	13	10	8	8	6	4
	Long.	21	22	22	22	23	22	22	22	21	20	18	15	15
No. 17. MANILLA ... 27th August to 22nd November.	Lat.	18	16	13	11	11	9	8	7	5	3	3	0° 9′ N.	1 S.
	Long.	23	22	22	21	20	19	18	17	17	15	12	14	15
No. 18. LUDWIG HEYN... 6th September to 22nd December.	Lat.	18	15	14	13	11	10	8	6	5	5	4	3	2
	Long.	26	26	26	26	25	24	24	22	20	19	17	16	15
No. 19. HEDDA FRIDRIKA 14th September to 5th January.	Lat.	27	25	23	21	18	16	13	12	10	9	8	8	7
	Long.	22	22	24	25	25	26	25	24	23	23	22	22	23
No. 20. CHRISTIAN LOVEN 15th October to 23rd January.	Lat.	24	21	17	14	12	10	8	8	7	6	5	5	4
	Long.	24	25	26	26	25	24	23	24	23	22	22	23	23

VOYAGES FROM EUROPE TO MELBOURNE—*continued.*

NAME OF SHIP.		NUMBER OF DAYS OUT.												
		27.	28.	29.	30.	31.	32.	33.	34.	35.	36.	37.	38.	39.
No. 1. OCEAN CHIEF ... 19th August to 30th November.	Lat.	2	1	4	6	8	8	10	10	13	16	19	23	27
	Long.	26	28	29	35	35	32	34	34	35	36	36	37	31
No. 2. OCEAN CHIEF ... 31st January to 13th April	Lat.	8	11	14	17	20	24	27	29	32	33	34	34	33
	Long.	32	32	32	32	32	32	33	32	30	27	24	20	18
No. 3. OCEAN CHIEF ... 16th June to 27th August.	Lat.	10	...	17	21	24	26	28	30	32	32	33	33	35
	Long.	...	...	...	...	33	...	31	...	...	...	...	17	...
No. 4. CES. GODEFFROY 30th December to 7th April.	Lat.	3	3	2	2	1	0·2	0·3 S.	1	3	5	7	8	11
	Long.	24	24	24	25	25	25	26	26	27	29	30	30	30
No. 5. MARCO POLO ... 1st May to 31st July.	Lat.	...	...	...	...	...	...	...	...	...	0·3 N.	5 S.	...	...
	Long.	...	...	...	...	...	...	...	...	...	25	27	...	...
No. 6. LA ROCHELLE ... 9th November to 26th January.	Lat.	17	19	22	23	25	27	29	31	32	34	35	37	39
	Long.	31	31	31	31	31	29	28	27	25	22	20	18	17
No. 7. CAROLINA ... 3rd January.	Lat.	2	0·1	2 S	4	7	9	12	15	17	20	22	23	25
	Long.	23	25	27	28	30	31	32	32	32	32	32	31	29
No. 8. CONFLICT ... 16th July to 2nd October.	Lat.	7	10	13	16	18	21	24	26	27	29	32	35	37
	Long.	28	29	31	31	31	31	29	28	26	25	21	17	13
No. 9. SIR WM. EYRE ... 14th July to 9th October.	Lat.	4	3	2	0·5 N.	2 S.	5	8	11	14	16	18	21	24
	Long.	17	19	22	24	25	27	29	31	33	33	34	34	33
No. 10, SIR WM. EYRE ... 14th May to 3rd August.	Lat.	13	15	17	19	21	24	25	28	30	33	35	36	36
	Long.	34	36	36	37	37	38	35	33	30	26	22	19	17
No. 11. CRIMEA ... 21st July to 29th October.	Lat.	4	3	0·8 N.	0·2 S	3	6	8	10	14	16	18	20	22
	Long.	24	25	27	28	30	31	32	33	35	35	36	37	37
No. 12. TUISKO ... (from New York to Melbourne) 9th February to 19th May.	Lat.	8	5	3	2 N	0·35 S.	3	6	9	12	15	18	21	24
	Long.	24	23	23	23	24	25	26	27	28	29	30	30	31
No. 13. SUSANNA ... 25th June to 11th October.	Lat.	12	11	9	8	7	6	6	6	5	3 N	0 S.	3	6
	Long.	25	26	25	25	25	22	22	22	21	23	25	27	28
No. 14. PODESTA ... 17th August to 24th November.	Lat.	5	4	3	1 N.	0·4 S.	3	5	4	12	15	18	20	21
	Long.	17	15	15	17	19	21	22	23	23	24	24	24	23
No. 15. CESAR AND HELENE 10th August to 28th November.	Lat.	11	9	8	8	8	7	7	5	4	4	2	1 N.	0·5 S
	Long.	26	25	24	22	20	19	17	15	17	18	16	18	19
No. 16. MANILLA ... 30th August to 27th November.	Lat.	3	2	1	0·3 N.	0·5 S.	2	4	7	10	13	15	17	20
	Long.	13	15	14	19	22	20	21	22	25	25	28	29	31
No. 17. MANILLA ... 27th August to 22nd November.	Lat.	4	7	10	13	16	17	19	20	21	22	24	26	28
	Long.	16	18	20	21	22	23	24	24	23	22	21	20	19
No. 18. LUDWIG HEYN... 6th September to 22nd December.	Lat.	2	2	1	0·0 N	1 S.	3	5	7	10	13	15	17	19
	Long.	16	18	19	20	22	23	25	26	27	28	29	31	32
No. 19. HEDDA FRIDBIKA ... 14th September to 5th January.	Lat.	6	6	5	5	4	3	3	2	1 N.	1 S.	2	4	7
	Long.	23	21	21	20	18	19	19	20	21	22	26	26	27
No. 20. CHRISTIAN LOVEN ... 15th October to 23rd January.	Lat.	3	1 N.	0·3 S.	2	3	6	8	11	13	15	17	19	20
	Long.	23	25	27	28	29	31	32	32	31	31	31	31	30

VOYAGES FROM EUROPE TO MELBOURNE—*continued.*

NAME OF SHIP.		NUMBER OF DAYS OUT.												
		40.	41.	42.	43.	44.	45.	46.	47.	48.	49.	50.	51.	52.
No. 1. OCEAN CHIEF ... 19th August to 30th November.	Lat.	30	33	35	36	38	39	41	42	43	43	44	45	45
	Long.	34	31	27	23	18	14	6	3 W.	2 E.	7	13	18	22
No. 2. OCEAN CHIEF ... 31st January to 13th April.	Lat.	35	37	38	40	42	44	45	46	47	48	48	48	48
	Long.	17	14	9	5	1 W.	2 E.	6	13	19	25	32	38	42
No. 3. OCEAN CHIEF ... 16th June to 27th August.	Lat.	37	40	42	44	44	44	44	44	44	45	45	46	48
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 4. CES. GODEFFROY ... 30th December to 7th April.	Lat.	14	17	18	21	22	23	24	26	28	29	30	30	30
	Long.	31	32	32	31	30	28	28	27	27	27	28	28	26
No. 5. MARCO POLO ... 1st May to 31st July.	Lat.	...	...	...	...	...	27	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	38	...	...	...	...	...	...	...
No. 6. LA ROCHELLE ... 9th November to 26th January.	Lat.	40	42	43	44	44	46	47	48	49	49	50	50	51
	Long.	12	10	8	7	6	0·24W	6 E.	12	14	20	26	32	36
No. 7. CAROLINA ... ... 3rd January.	Lat.	27	27	28	29	29	31	32	33	35	34	34	35	34
	Long.	27	25	23	21	20	19	17	14	11	8	5	2 W.	1 E.
No. 8. CONFLICT ... ... 16th July to 2nd October.	Lat.	38	37	37	36	38	39	41	42	43	44	43	46	45
	Long.	9	7	5	2	1 W.	1 E.	5	10	16	20	22	23	24
No. 9. SIR WM. EYRE ... 14th July to 9th October.	Lat.	27	31	33	35	38	38	36	35	37	40	41	42	43
	Long.	31	29	26	23	19	14	10	10	7	4	0·5 W.	4 E.	11
No. 10. SIR WM. EYRE ... 14th May to 3rd August.	Lat.	37	38	37	38	38	39	39	39	40	42	43	44	45
	Long.	12	9	4 W.	0·8 E.	5	8	12	16	19	23	27	31	35
No. 11. CRIMEA... ... ... 21st July to 29th October.	Lat.	24	26	29	31	34	35	36	37	38	39	40	40	40
	Long.	38	38	38	36	34	34	30	27	22	18	13	13	10
No. 12. TUISKO ... ... (from New York to Melbourne.) 9th February to 19th May.	Lat.	26	28	31	34	35	35	38	38	37	37	36	38	40
	Long.	32	33	34	32	29	26	26	26	26	26	25	23	19
No. 13. SUSANNA ... ... 25th June to 11th October.	Lat.	8	9	10	12	13	13	14	14	15	17	19	21	23
	Long.	30	31	32	33	35	37	37	37	37	36	36	35	34
No. 14. PODESTA ... ... 17th August to 24th November.	Lat.	22	24	24	25	26	27	29	31	30	30	32	33	32
	Long.	23	24	24	26	28	29	27	24	22	21	21	21	19
No. 15. CESAR AND HELENE ... 10th August to 28th November.	Lat.	3	6	9	12	14	17	19	20	21	23	23	22	23
	Long.	20	21	22	23	24	25	25	25	24	24	27	22	20
No. 16. MANILLA ... ... 30th August to 27th November.	Lat.	22	23	25	26	28	27	28	28	29	30	31	32	31
	Long.	31	29	27	23	19	16	17	16	15	11	8	4	1
No. 17. MANILLA ... ... 27th August to 22nd November.	Lat.	29	31	33	34	36	37	37	37	37	37	37	38	38
	Long.	16	14	9	5	3 W.	1 E.	4	6	10	14	18	22	23
No. 18. LUDWIG HEYN... ... 6th September to 22nd December.	Lat.	21	23	25	27	29	31	33	33	34	33	34	35	36
	Long.	33	34	34	34	34	33	30	29	27	25	24	23	23
No. 19. HEDDA FRIDRIKA ... 14th September to 5th January.	Lat.	10	12	15	17	19	20	22	22	23	25	25	28	30
	Long.	28	29	28	28	28	26	24	22	21	22	21	21	17
No. 20. CHRISTIAN LOVEN ... 15th October to 23rd January.	Lat.	21	22	23	23	24	26	27	29	29	29	31	33	34
	Long.	30	29	28	27	27	25	24	20	17	15	16	15	13

VOYAGES FROM EUROPE TO MELBOURNE—*continued.*

NAME OF SHIP.		NUMBER OF DAYS OUT.												
		53.	54.	55.	56.	57.	58.	59.	60.	61.	62.	63.	64.	65.
No. 1. OCEAN CHIEF ... ... 19th August to 30th November.	Lat.	45	47	47	48	48	48	48	48	48	48	48	47	46
	Long.	26	31	31	44	50	57	64	71	76	81	90	92	100
No. 2. OCEAN CHIEF ... ... 31st January to 13th April.	Lat.	49	48	48	48	48	48	49	49	49	48	47	47	48
	Long.	45	51	58	65	72	78	82	89	96	101	104	110	117
No. 3. OCEAN CHIEF ... ... 16th June to 27th August.	Lat.	47	46	46	45	44	46	46	46	46	44	44	43	42
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	114
No. 4. CES. GODEFFROY ... 30th December to 7th April.	Lat.	30	33	33	33	38	39	40	40	41	42	42	42	42
	Long.	24	23	21	17	13	9	6	3 W.	1 E.	5	9	11	15
No. 5. MARCO POLO ... ... 1st May to 31st July.	Lat.	...	...	46	...	...	...	47	...	...	...	...	...	44
	Long.	...	W.	0·2 E.	...	...	...	15	...	...	...	...	...	55
No. 6. LA ROCHELLE ... ... 9th November to 26th January.	Lat.	51	52	52	52	52	53	53	53	53	53	53	52	52
	Long.	38	41	44	46	50	56	57	62	65	72	78	84	89
No. 7. CAROLINA ... ... 3rd January.	Lat.	36	36	37	37	38	37	36	38	37	41	42	42	41
	Long.	4	7	10	14	18	21	22	22	21	22	24	25	26
No. 8. CONFLICT ... ... 16th July to 2nd October.	Lat.	44	44	44	44	44	44	44	44	45	44	44	44	44
	Long.	25	28	31	33	37	41	46	53	60	65	69	75	80
No. 9. SIR WM. EYRE ... 14th July to 9th October.	Lat.	46	46	46	47	45	44	44	44	45	46	47	47	47
	Long.	16	21	23	23	23	23	26	29	31	35	38	42	46
No. 10. SIR WM. EYRE ... 14th May to 3rd August.	Lat.	48	48	48	48	50	50	51	50	51	50	49	50	48
	Long.	41	44	49	54	57	61	66	72	77	81	85	87	90
No. 11. CRIMEA ... ... 21st July to 29th October.	Lat.	39	38	38	38	40	40	40	40	41	41	41	40	40
	Long.	8	5	6	6	6	3 W.	1 E.	4	8	12	16	19	18
No. 12. TUISKO ... ... (from New York to Melbourne.) 9th February to 19th May.	Lat.	40	41	40	41	39	39	40	40	41	42	42	42	42
	Long.	16	12	11	1	2 W.	2 E.	6	10	15	19	24	27	29
No. 13. SUSANNA ... ... 25th June to 11th October.	Lat.	25	27	28	30	33	35	36	36	37	36	36	36	40
	Long.	33	32	30	29	28	26	23	19	16	13	11	8	6
No. 14. PODESTA ... ... 17th August to 24th November.	Lat.	33	34	34	36	37	37	39	40	40	41	41	41	41
	Long.	19	17	16	13	9	5	1 W.	2 E.	7	11	16	20	24
No. 15. CESAR AND HELENE ... 10th August to 28th November.	Lat.	24	24	25	27	28	29	30	31	31	33	35	35	37
	Long.	21	21	20	21	21	21	21	22	22	20	17	13	10
No. 16. MANILLA ... ... 30th August to 27th November.	Lat.	33	36	37	38	39	40	40	40	40	41	41	42	42
	Long.	2	3	1 W.	3 E.	8	13	18	20	28	33	37	42	45
No, 17. MANILLA ... ... 27th August to 22nd November.	Lat.	37	39	42	44	44	44	44	44	44	45	44	44	45
	Long.	27	27	28	29	33	37	42	47	53	56	58	64	69
No. 18. LUDWIG HEYN ... 6th September to 22nd December.	Lat.	37	38	37	37	37	37	36	37	38	39	39	39	39
	Long.	23	23	21	20	16	14	12	10	8	4 W.	0 E.	5	8
No. 19. HEDDA FRIDRIKA ... 14th September to 5th January.	Lat.	31	31	32	33	34	35	36	37	37	38	38	39	39
	Long.	14	11	9	8	5	3	1 W.	2 E.	5	9	11	12	13
No. 20. CHRISTIAN LOVEN ... 15th October to 23rd January.	Lat.	34	36	37	39	39	39	39	40	39	40	40	39	40
	Long.	12	11	7	3 W.	1 E.	5	10	12	15	17	22	27	29

VOYAGES FROM EUROPE TO MELBOURNE—*continued.*

NAME OF SHIP.		NUMBER OF DAYS OUT.												
		66.	67.	68.	69.	70.	71.	72.	73.	74.	75.	76.	77.	78.	79.
No. 1. OCEAN CHIEF ... 19th August to 30th November	Lat.	46	45	45	43	42	41	40	...	...	...	...	...	...	...
	Long.	109	111	117	123	128	134	140	...	...	...	...	...	...	...
No. 2. OCEAN CHIEF ... 31st January to 13th April.	Lat.	46	45	44	45	45	42	44	44	...	...	...	...	...	...
	Long.	123	127	130	133	135	137	137	143	...	...	...	...	...	...
No. 3. OCEAN CHIEF ... 16th June to 27th August.	Lat.	41	41	41	41	41	40	39	Cape	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	Otway.	...	...	...	...	...	...
No. 4. CES. GODEFFROY ... 30th December to 7th April.	Lat.	42	45	43	43	43	43	44	44	44	44	43	45	44	47
	Long.	19	25	30	34	38	41	46	46	51	52	53	55	56	60
No. 5. MARCO POLO ... 1st May to 31st July.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 6. LA ROCHELLE ... 9th November to 26th January	Lat.	52	51	51	51	50	49	47	47	46	44	42	39	Cape	...
	Long.	90	90	105	111	116	121	126	128	129	131	136	139	Otway.	...
No. 7. CAROLINA ... ... 3rd January.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 8. CONFLICT ... ... 16th July to 2nd October.	Lat.	44	43	43	42	42	42	42	41	41	40	40	39	Cape	...
	Long.	85	91	93	98	103	109	115	120	124	130	134	139	Otway.	...
No. 9. SIR WM. EYRE ... 14th July to 9th October.	Lat.	47	49	50	51	52	50	49	48	47	47	46	46	46	45
	Long.	50	55	61	67	72	78	81	87	92	99	104	106	110	115
No. 10. SIR WM. EYRE ... 14th May to 3rd August.	Lat.	46	45	46	47	47	45	43	43	43	42	41	40	39	39
	Long.	95	99	100	103	106	110	116	121	126	131	135	139	143	143
No. 11. CRIMEA ... ... 21st July to 29th October.	Lat.	39	39	39	38	39	40	40	40	39	40	40	40	39	40
	Long.	23	27	29	31	34	39	43	46	50	55	59	63	68	72
No. 12. TUISKO ... ... (from New York to Melbourne) 9th February to 19th May.	Lat.	43	43	43	44	45	45	45	45	44	44	43	42	41	41
	Long.	32	36	41	45	51	53	55	61	66	69	74	78	82	87
No. 13. SUSANNA ... ... 25th June to 11th October.	Lat.	40	41	41	41	41	40	40	41	40	40	41	40	39	40
	Long.	4 W.	0·5 E.	4	8	11	14	15	15	17	16	20	22	25	28
No. 14. PODESTA ... ... 17th August to 24th November	Lat.	42	42	42	43	43	43	43	43	43	43	43	43	42	42
	Long.	28	31	36	40	45	48	52	56	60	66	71	75	80	84
No. 15. CESAR AND HELENE 10th August to 28th November	Lat.	37	38	40	41	42	41	40	40	40	41	40	41	42	43
	Long.	6	4	2	2	0·3 W.	6 E.	12	17	19	25	27	28	29	30
No. 16. MANILLA ... ... 30th August to 27th November	Lat.	44	45	45	45	45	44	44	44	45	45	46	45	45	44
	Long.	49	54	59	64	69	75	81	86	91	96	101	106	110	112
No. 17. MANILLA ... ... 27th August to 22nd November	Lat.	44	44	43	43	44	44	43	43	43	42	42	41	41	41
	Long.	74	78	84	88	90	95	100	106	111	115	119	125	127	128
No. 18. LUDWIG HEYN ... 6th Sept. to 22nd Dec.	Lat.	39	39	39	39	39	39	38	38	38	38	39	39	40	39
	Long.	11	14	18	22	26	31	35	36	40	41	43	44	47	51
No. 19. HEDDA FRIDRIKA ... 14th September to 5th January.	Lat.	40	40	40	41	41	41	40	39	38	38	38	37	37	38
	Long.	16	19	23	25	28	32	34	37	39	42	45	48	49	52
No. 20. CHRISTIAN LOVEN ... 15th October to 23rd January.	Lat.	39	39	40	40	40	40	41	40	40	40	40	40	40	40
	Long.	33	36	38	42	45	48	53	58	59	62	65	67	71	74

VOYAGES FROM EUROPE TO MELBOURNE—*continued.*

NAME OF SHIP.		NUMBER OF DAYS OUT.													
		80.	81.	82.	83.	84.	85.	86.	87.	88.	89.	90.	91.	92.	93.
No. 1. OCEAN CHIEF ... 19th August to 30th October.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 2. OCEAN CHIEF ... 31st January to 13th April.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 3. OCEAN CHIEF ... 16th June to 27th August.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
No 4. .CES. GODEFFROY ... 30th December to 7th April.	Lat.	47	46	46	46	47	48	48	46	46	46	46	45	44	43
	Long.	66	69	76	80	84	90	96	102	108	113	116	119	122	127
No. 5. MARCO POLO ... 1st May to 31st July.	Lat.	...	...	...	...	...	...	40	...	...	...	...	Port	...	...
	Long.	...	...	...	...	...	...	131	...	...	...	...	Phillip	...	...
No. 6. LA ROCHELLE ... 9th November to 26th January.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 7. CAROLINA ... ... 3rd January.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 8. CONFLICT ... ... 16th July to 2nd October.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 9. SIR WM. EYRE ... 14th July to 9th October.	Lat.	45	43	43	44	45	46	44	40	Cape	...	...	...	...	...
	Long.	119	124	126	128	133	134	137	141	Otway	...	...	...	...	...
No. 10. SIR WM. EYRE ... 14th May to 3rd August.	Lat.	39	Cape	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	144	Otway	...	...	...	...	...	...	...	...	...	...	...	...
No. 11. CRIMEA ... ... 21st July to 29th October.	Lat.	39	39	39	40	40	39	39	39	39	39	39	38	39	39
	Long.	75	77	78	83	88	92	97	100	102	105	109	111	113	116
No. 12. TUISKO ... ... (from New York to Melbourne) 9th February to 19th May.	Lat.	41	41	41	41	40	40	40	40	40	41	42	43	43	42
	Long.	91	95	99	103	107	112	116	120	123	126	129	130	131	134
No. 13. SUSANNA ... ... 25th June to 11th October.	Lat.	40	40	40	40	40	41	41	41	41	40	41	41	41	40
	Long.	31	34	39	42	47	51	54	59	64	68	72	77	81	85
No. 14. PODESTA ... ... 17th August to 24th November.	Lat.	43	42	41	41	41	40	41	41	41	41	41	40	40	...
	Long.	87	89	92	93	96	100	104	108	112	116	120	124	126	...
No. 15. CESAR AND HELENE 10th August to 28th November.	Lat.	44	44	44	44	43	44	43	43	43	43	43	43	43	43
	Long.	35	40	43	45	49	54	59	60	64	69	77	82	86	91
No. 16. MANILLA ... ... 30th August to 27th November.	Lat.	43	44	44	43	42	42	41	40	39	Cape	...	...	...	...
	Long.	114	115	117	121	125	131	136	140	143	Otway	...	...	...	...
No. 17. MANILLA ... ... 27th August to 21st November.	Lat.	40	41	43	44	43	41	40	Cape	...	...	...	...	...	...
	Long.	128	129	133	136	137	140	142	Otway	...	...	...	...	...	...
No. 18. LUDWIG HEYN ... 6th September to 22nd Dec.	Lat.	39	39	39	39	39	39	39	39	39	39	39	39	39	39
	Long.	55	59	63	65	70	74	78	82	85	88	92	95	97	102
No. 19. HEDDA FRIDRIKA ... 14th September to 5th Jan.	Lat.	39	38	37	38	38	38	37	38	38	38	39	39	37	36
	Long.	55	58	59	64	67	72	74	79	80	80	85	87	90	91
No. 20. CHRISTIAN LOVEN ... 15th October to 23rd January.	Lat.	41	41	41	40	40	40	40	40	40	40	40	40	40	40
	Long.	79	84	88	93	98	102	105	108	112	112	113	117	122	126

VOYAGES FROM EUROPE TO MELBOURNE—*continued.*

NAME OF SHIP.		NUMBER OF DAYS OUT.											
		94.	95.	96.	97.	98.	99.	100.	101.	102.	103.	104.	105.	106.
No. 1. OCEAN CHIEF ... ... 19th August to 30th October.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 2. OCEAN CHIEF ... ... 31st January to 13th April.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 3. OCEAN CHIEF ... ... 16th June to 27th August.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 4. CES. GODEFFROY ... 30th December to 7th April.	Lat.	42	41	40	39	39	Cape Otway	...	...	...	...	...	...	...
	Long.	131	136	141	144	145		...	...	...	...	...	...	...
No. 5. MARCO POLO ... ... 1st May to 31st July.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 6. LA ROCHELLE ... ... 9th November to 26th January.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 7. CAROLINA ... ... 3rd January.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 8. CONFLICT ... ... 16th July to 2nd October.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 9. SIR WM. EYRE... ... 14th July to 9th October.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 10. SIR WM. EYRE... ... 14th May to 3rd August.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 11. CRIMEA ... ... 21st July to 29th October.	Lat.	39	40	40	40	39	39	40	Cape Otway	...	...	...	...	...
	Long.	121	126	130	134	136	138	141		...	...	...	...	...
No. 12. TUISKO ... ... (from New York to Melbourne.) 9th February to 19th May.	Lat.	41	39	Made Portland	39	Cape Otway	...	...	...	...	...	...	...	...
	Long.	138	140		141		...	...	...	...	...	...	...	...
No. 13. SUSANNA ... ... 25th June to 11th October.	Lat.	41	41	41	41	41	40	40	40	40	40	40	41	39
	Long.	89	92	94	98	103	107	112	116	120	123	126	130	133 [1]
No. 14. PODESTA ... ... 17th August to 24th November.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 15. CESAR AND HELENE ... 10th August to 28th November.	Lat.	43	42	42	42	43	43	43	43	42	42	42	40	40
	Long.	95	99	102	106	111	116	116	120	123	128	131	135	138 [2]
No. 16. MANILLA ... ... 30th August to 27th November.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 17. MANILLA ... ... 27th August to 21st November.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 18. LUDWIG HEYN... ... 6th September to 22nd December.	Lat.	39	39	39	39	39	39	37	38	38	38	38	39	40
	Long.	106	110	114	118	122	126	128	128	129	131	133	136	139 [3]
No. 19. HEDDA FRIDRIKA ... 14th September to 5th January.	Lat.	37	37	38	38	38	38	39	39	39	39	40	41	40
	Long.	93	94	98	103	105	111	111	115	118	120	126	126	125 [4]
No. 20. CHRISTIAN LOVEN ... 15th October to 23rd January.	Lat.	40	40	41	41	40	39	Cape Otway	...	...	...	...	...	...
	Long.	129	133	136	136	138	141		...	...	...	...	...	...

[1] Sighted Cape Otway in 3 days more. [2] Sighted Cape Otway in 4 days more. [3] Sighted Cape Otway 2 days later. [4] Made Kangaroo Island 8 days later.

VOYAGES FROM EUROPE TO MELBOURNE—*continued.*

NAME OF SHIP.		NUMBER OF DAYS OUT.											
		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
No. 21. LIGHTNING ... ... 31st January to 18th April.	Lat.	...	...	...	...	...	41	38	35	33	33	32	30	27
	Long.	...	...	...	...	...	18	22	25	26	26	27	27	27
No. 22. HENRIETTA HELENA ... 21st October to 6th February.	Lat.	49	46	44	43	40	38	36	33	32	30	29	28	25
	Long.	6	10	11	12	15	14	18	20	21	21	20	19	18
No. 23. JOHANNES ... ... 8th December to 31st March.	Lat.	50	49	49	48	48	48	47	46	46	45	45	44	43
	Long.	5	7	10	12	11	12	12	12	13	13	14	14	16
No. 24. MAGDALENA ... ... 3rd January to 31st March.	Lat.	48	46	43	41	37	34	31	28	27	24	22	18	14
	Long.	8	12	16	17	17	18	19	20	21	23	24	26	26
No. 25. DER OST ... ... 3rd January to 18th April.	Lat.	50	50	49	47	43	41	39	37	34	32	30	29	26
	Long.	6	6	9	11	13	14	15	14	17	19	21	22	23
No. 26. DER WEST ... ... 6th January to 2nd April.	Lat.	49	48	46	40	37	33	30	28	25	22	19	16	13
	Long.	5	8	12	16	17	17	20	21	23	25	26	26	25
No. 27. DER NORD ... ... 3rd January to 14th April.	Lat.	49	48	45	43	40	39	38	35	32	31	28	25	22
	Long.	5	8	11	13	15	16	18	18	20	20	22	23	24
No. 28. DER SUD ... ... 4th January to 23rd April.	Lat.	...	48	45	43	41	40	38	35	32	31	28	26	24
	Long.	...	8	10	12	14	15	16	18	20	20	21	22	24
No. 29. HORIZONT ... ... 18th January to 30th April.	Lat.	49	49	50	50	50	49	49	47	44	42	40	38	37
	Long.	5	5	5	6	9	7	8	9	11	12	14	15	16
No. 30. FIDES ... ... (from New York to Melbourne) 25th December to 25th April.	Lat.	40	39	38	36	35	34	34	34	33	32	33	33	31
	Long.	72	69	65	63	60	58	57	54	51	51	49	46	43
No. 31. VON BERG ... ... 3rd January to 22nd April.	Lat.	49	49	47	44	42	40	38	35	32	30	29	26	23
	Long.	6	7	9	11	14	14	15	17	18	19	21	22	23
No. 32. KENT ... ... 13th February to 6th May, 1859.	Lat.	49	47	46	46	46	43	41	40	37	34	34	33	31
	Long.	5	7	8	9	10	13	14	14	16	18	19	19	20
No. 33. DIRK ARNOLD ... ... 10th January to 10th April.	Lat.	49	49	48	48	48	47	44	44	44	43	42	40	37
	Long.	4	6	7	8	11	12	11	12	12	12	13	14	15
No. 34. BLUE JACKET ... ... 9th February to 13th May.	Lat.	51	51	51	50	47	45	43	42	39	36	34	31	30
	Long.	7	8	7	7	9	10	11	13	14	16	17	19	19
No. 35. ARABIAN ... ... 21st February to 23rd May.	Lat.	51	51	...	...	50	50	50	48	46	44	43	42	41
	Long.	7	9	...	...	...	14	13	12	11	10	12	12	14
No. 36. QUEEN OF THE CLYDE ... 15th January to 29th April.	Lat.	51	51	51	50	50	51	50	49	48	46	44	44	44
	Long.	7	6	7	7	8	9	8	8	8	10	10	9	10
No. 37. ELISE RUEBEKE ... 28th February to 7th June.	Lat.	46	45	45	45	43	42	41	39	36	35	35	34	32
	Long.	9	9	8	9	13	16	15	17	20	21	21	22	27
No. 38. STAATSRAAD VAN ERRICK 26th February to 5th June.	Lat.	50	49	49	48	47	47	45	45	44	42	41	41	43
	Long.	6	7	9	10	13	14	14	15	15	16	17	17	18
No. 39. NEPAUL ... ... February to June.	Lat.	48	48	48	45	43	40	38	36	36	35	34	33	33
	Long.	6	7	8	10	12	14	16	17	17	16	17	16	17

VOYAGES FROM EUROPE TO MELBOURNE—*continued.*

NAME OF SHIP.		NUMBER OF DAYS OUT.												
		14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.
No. 21. LIGHTNING ... ... 31st January to 18th April.	Lat.	22	17	12	7	3	2	1 N.	0·1 S.	3	5	9	12	15
	Long.	27	28	28	27	27	27	28	29	31	33	34	35	36
No. 22. HENRIETTA HELENA ... 21st October to 6th February.	Lat.	24	22	21	18	16	14	13	11	10	10	8	7	5
	Long.	19	20	21	21	21	22	22	22	22	22	22	23	23
No. 23. JOHANNES ... ... 8th December to 31st March.	Lat.	40	39	38	37	35	33	31	28	25	21	18	15	12
	Long.	13	13	14	14	16	17	17	18	20	21	21	22	22
No. 24. MAGDALENA ... ... 3rd January to 31st March.	Lat.	11	8	5	3	2	1	1	0·40 N	0·37 S.	3	5	8	11
	Long.	24	24	19	19	19	22	20	20	25	27	30	32	34
No. 25. DER OST ... ... 3rd January to 18th April.	Lat.	23	21	18	17	11	8	5	3	3	3	3	3	2
	Long.	23	23	25	25	25	25	23	22	22	22	22	22	23
No. 26. DER WEST ... ... 6th January to 2nd April.	Lat.	10	7	4	3	3	2	2	1	1	0·30 N	2 S.	4	6
	Long.	23	22	22	21	21	21	21	21	22	28	27	29	30
No. 27. DER NORD ... ... 3rd January to 14th April.	Lat.	19	16	13	10	8	5	4	4	3	3	2	1 N.	0 S.
	Long.	24	26	26	25	24	23	22	23	22	21	21	24	25
No. 28. DER SUD ... ... 4th January to 23rd April.	Lat.	20	17	14	...	10	8	6	5	4	4	4	4	4
	Long.	25	...	25	23	22	21	19	19	19	19	18	18	18
No. 29. HORIZONT ... ... 18th January to 30th April.	Lat.	35	33	31	28	25	22	18	16	13	10	7	6	5
	Long.	16	17	19	21	22	24	25	25	24	23	23	22	22
No. 30. FIDES... ... ... (from New York to Melbourne) 25th December to 25th April.	Lat.	30	28	27	28	27	26	24	22	21	20	19	18	17
	Long.	41	40	40	40	39	37	36	35	35	34	34	33	33
No. 31. VON BERG ... ... 3rd January to 22nd April.	Lat.	20	16	13	10	7	5	3	3	3	3	2	1 N.	0 S.
	Long.	25	26	25	24	25	22	21	21	21	22	21	22	24
No. 32. KENT ... ... 13th February to 6th May, 1859.	Lat.	28	26	20	17	13	11	10	9	7	5	4	3	2
	Long.	20	20	20	20	20	20	20	21	21	21	22	21	21
No. 33. DIRK ARNOLD ... ... 10th January to 10th April.	Lat.	34	31	28	25	21	18	15	11	9	6	3	1 N.	0 S.
	Long.	17	19	20	22	23	25	26	26	26	26	26	27	27
No. 34. BLUE JACKET ... ... 9th February to 13th May.	Lat.	30	29	28	25	22	20	18	16	13	11	10	9	8
	Long.	20	21	20	20	21	21	20	20	19	19	19	18	18
No. 35. ARABIAN ... ... 21st February to 23rd May.	Lat.	39	38	36	33	31	29	27	24	20	17	15	14	12
	Long.	...	16	17	18	20	21	22	24	25	26	26	25	25
No. 36. QUEEN OF THE CLYDE ... 15th January to 29th April.	Lat.	43	43	41	38	36	34	32	30	27	24	22	20	19
	Long.	10	11	12	14	15	16	18	19	21	22	23	24	25
No. 37. ELISE RUEBEKE ... 28th February to 7th June.	Lat.	31	31	30	27	25	22	19	16	13	10	8	7	5
	Long.	26	26	26	26	27	27	27	26	26	25	24	24	23
No. 38. STAATSRAAD VAN ERRICK 26th February to 5th June.	Lat.	36	34	32	29	27	25	22	20	17	15	13	12	11
	Long.	18	18	18	18	20	21	22	24	26	26	25	25	26
No. 39. NEPAUL ... ... February to June.	Lat.	32	31	30	29	28	27	24	22	19	16	14	12	11
	Long.	16	18	18	19	19	19	20	21	22	22	23	23	23

VOYAGES FROM EUROPE TO MELBOURNE—*continued.*

NAME OF SHIP.		NUMBER OF DAYS OUT.												
		27.	28.	29.	30.	31.	32.	33.	34.	35.	36.	37.	38.	39.
No. 21. LIGHTNING ... ... 31st January to 18th April.	Lat.	18	21	24	26	31	35	39	41	43	43	44	45	44
	Long.	37	37	37	38	38	37	34	29	21	13	10	5	1 W.
No. 22. HENRIETTA HELENA ... 21st October to 6th February.	Lat.	3	2	2 N.	0 S.	2	5	7	11	13	16	19	21	24
	Long.	25	25	26	28	29	31	32	33	34	35	33	36	35
No. 23. JOHANNES ... ... 8th December to 31st March.	Lat.	10	8	7	6	7	6	4	4	3	1	0·2 N.	1 S.	3
	Long.	22	22	21	22	22	22	22	22	23	24	24	26	27
No. 24. MAGDALENA ... ... 3rd January to 31st March.	Lat.	14	17	20	23	25	26	28	30	32	33	34	35	35
	Long.	35	35	36	33	35	36	36	36	35	33	30	27	25
No. 25. DER OST ... ... 3rd January to 18th April.	Lat.	0 N.	0 S.	1	1	5	7	9	11	14	16	18	19	21
	Long.	25	26	28	28	30	32	33	34	34	34	34	33	33
No. 26. DER WEST ... ... 6th January to 2nd April.	Lat.	9	11	14	16	18	21	23	25	28	30	31	32	32
	Long.	31	33	34	34	35	34	34	33	32	32	32	32	30
No. 27. DER NORD ... ... 3rd January to 14th April.	Lat.	1	2	3	5	7	8	11	13	15	18	19	21	23
	Long.	26	27	29	30	30	32	32	32	29	32	29	33	30
No. 28. DER SUD ... ... 4th January to 23rd April.	Lat.	3	3	3	4	2	2	1	0 N.	0 S.	1	1	1	2
	Long.	18	18	18	18	17	17	18	18	17	18	18	19	18
No. 29. HORIZONT ... ... 18th January to 30th April.	Lat.	4	2	1 N.	0·1 S.	1	2	3	5	7	10	13	·16	18
	Long.	22	22	23	21	20	20	21	23	25	27	28	29	28
No. 30. FIDES ... ... (from New York to Melbourne) 25th December to 25th April.	Lat.	15	14	12	11	9	7	5	4	4	3	2	2	2
	Long.	32	31	31	29	28	26	23	22	22	22	22	21	21
No. 31. VON BERG ... ... 3rd January to 22nd April.	Lat.	2	4	6	8	10	13	15	17	19	21	23	24	26
	Long.	27	27	28	30	31	31	32	31	31	31	31	30	31
No. 32. KENT ... ... 13th February to 6th May, 1859.	Lat.	1	0 N.	2 S.	5	9	12	14	16	17	18	19	19	20
	Long.	21	21	21	23	25	26	27	27	27	27	26	26	26
No. 33. DIRK ARNOLD ... ... 10th January to 10th April.	Lat.	1	2	3	4	6	7	8	10	13	16	18	20	21
	Long.	27	27	27	28	29	30	31	33	34	34	34	34	34
No. 34. BLUE JACKET ... ... 9th February to 13th May.	Lat.	7	7	5	5	5	4	3	0 N.	2 S.	5	8	10	12
	Long.	18	17	18	17	18	17	18	17	19	21	23	25	29
No. 35. ARABIAN ... ... 21st February to 23rd May.	Lat.	10	8	6	5	3	3	1	0 N.	S.	4	7	9	11
	Long.	25	24	24	23	23	22	24	25	...	29	31	32	33
No. 36. QUEEN OF THE CLYDE ... 15th January to 29th April.	Lat.	15	13	11	8	5	3	0·5 N.	0·2 S.	1	2	3	6	8
	Long.	26	26	25	25	25	25	24	24	24	25	26	28	31
No. 37. ELISE RUEBEKE ... 28th February to 7th June.	Lat.	3	2 N.	0 S.	3	5	7	10	11	13	16	16	17	18
	Long.	22	22	22	23	25	27	29	30	30	30	29	29	28
No. 38. STAATSRAAD VAN ERRICK 26th February to 5th June.	Lat.	9	7	6	5	3	3	0 N.	1 S.	4	5	8	9	12
	Long.	25	25	25	25	26	26	27	28	29	31	32	33	35
No. 39. NEPAUL ... ... February to June.	Lat.	10	8	7	6	5	4	3	2	2	2	1	1	1
	Long.	23	23	23	23	22	22	22	22	22	23	23	23	24

VOYAGES FROM EUROPE TO MELBOURNE—*continued.*

NAME OF SHIP.		NUMBER OF DAYS OUT.												
		40.	41.	42.	43.	44.	45.	46.	47.	48.	49.	50.	51.	52.
No. 21. LIGHTNING ... ... 31st January to 18th April.	Lat.	44	44	44	44	43	43	42	43	44	44	44	43	42
	Long.	7 E.	12	18	24	31	38	42	45	53	59	64	69	71
No. 22. HENRIETTA HELENA ... 21st October to 6th February.	Lat.	27	30	31	32	33	34	34	35	36	37	35	36	36
	Long.	36	35	34	32	30	28	24	23	20	16	12	12	6
No. 23. JOHANNES ... ... 8th December to 31st March.	Lat.	5	8	10	13	15	16	18	20	22	24	24	25	27
	Long.	29	29	30	32	32	30	29	29	27	26	26	24	22
No. 24. MAGDALENA ... ... 3rd January to 31st March.	Lat.	36	36	37	38	41	41	42	42	41	43	44	43	44
	Long.	22	20	17	19	19	15	12	10	6	4 W.	2 E.	4	8
No. 25. DER OST ... ... 3rd January to 18th April.	Lat.	22	25	26	28	28	28	29	29	30	30	30	31	32
	Long.	33	33	33	31	31	31	31	31	28	28	28	27	26
No. 26. DER WEST ... ... 6th January to 2nd April.	Lat.	33	33	33	35	35	35	35	37	38	39	40	42	42
	Long.	28	25	23	21	17	13	12	9	7	3 W.	3 E.	8	12
No. 27. DER NORD ... ... 3rd January to 14th April.	Lat.	25	26	27	27	28	29	29	29	30	31	32	32	32
	Long.	30	32	29	28	28	29	27	28	26	28	25	23	23
No. 28. DER SUD ... ... 4th January to 23rd April.	Lat.	2	3	3	4	6	8	11	13	16	18	20	22	24
	Long.	17	18	18	20	22	23	24	25	25	26	26	25	26
No. 29. HORIZONT ... ... 18th January to 30th April.	Lat.	20	22	23	24	25	27	29	30	32	32	33	33	34
	Long.	28	28	28	27	26	24	21	18	16	13	10	9	6
No. 30. FIDES... ... ... (from New York to Melbourne) 25th December to 25th April.	Lat.	2	1	0·31	0 N.	0·3 S.	0	0	1	1	0	2	2	2
	Long.	20	21	21	21	21	21	21	21	21	21	21	21	21
No. 31. VON BERG ... ... 3rd January to 22nd April.	Lat.	28	30	31	31	31	31	32	32	32	32	32	32	32
	Long.	31	31	29	27	26	24	23	21	20	20	17	16	14
No. 32. KENT... ... ... 13th February to 6th May, 1859.	Lat.	21	25	29	30	30	31	32	33	34	35	36	37	39
	Long.	25	25	24	21	16	10	7	2	3 W.	1 E.	4	7	12
No. 33. DIRK ARNOLD... ... 10th January to 10th April.	Lat.	23	24	26	28	31	32	34	35	36	37	38	39	40
	Long.	34	34	34	33	31	30	27	25	23	19	15	13	9
No. 34. BLUE JACKET ... ... 9th February to 13th May.	Lat.	13	14	16	17	17	18	19	20	20	22	23	25	25
	Long.	26	26	27	27	27	29	25	25	23	24	23	21	20
No. 35. ARABIAN ... ... 21st February to 23rd May.	Lat.	14	15	16	19	20	23	24	26	28	30	31	33	35
	Long.	34	34	34	35	34	...	33	33	33	...	31	30	26
No. 36. QUEEN OF THE CLYDE ... 15th January to 29th April.	Lat.	11	12	15	18	20	22	25	27	28	28	29	30	32
	Long.	32	33	34	33	33	32	31	29	27	26	25	24	24
No. 37. ELISE RUEBEKE ... 28th February to 7th June.	Lat.	19	20	22	23	24	25	25	26	25	24	25	29	32
	Long.	27	27	25	23	21	19	18	17	14	12	13	14	12
No. 38. STAATSRAAD VAN ERRICK 26th February to 5th June.	Lat.	14	15	16	18	19	20	21	23	22	26	28	29	30
	Long.	35	35	35	35	35	35	34	34	34	33	32	32	30
No. 39. NEPAUL ... ... February to June.	Lat.	0 N.	1 S.	1	2	2	3	5	7	9	10	12	13	14
	Long.	24	24	25	26	26	27	28	29	30	31	31	33	33

VOYAGES FROM EUROPE TO MELBOURNE—*continued.*

NAME OF SHIP.		NUMBER OF DAYS OUT.												
		53.	54.	55.	56.	57.	58.	59.	60.	61.	62.	63.	64.	65.
No. 21. LIGHTNING ... ... 31st January to 18th April.	Lat.	43	44	45	45	45	45	46	43	41	42	43	43	42
	Long.	73	77	83	87	91	98	101	101	102	103	104	106	107
No. 22. HENRIETTA HELENA ... 21st October to 6th February.	Lat.	37	37	37	77	38	38	39	40	39	40	40	40	41
	Long.	1 W.	3 E.	6	11	14	18	18	20	23	26	30	34	38
No. 23. JOHANNES ... ... 8th December to 31st March.	Lat.	28	28	29	30	31	32	31	31	32	33	35	37	38
	Long.	20	19	17	15	13	10	6	4	4	3	3	3	3
No. 24. MAGDALENA ... ... 3rd January to 31st March.	Lat.	44	44	44	44	44	44	44	44	44	43	43	43	44
	Long.	16	17	21	24	28	32	40	40	44	45	48	52	55
No. 25. DER OST ... ... 3rd January to 18th April.	Lat.	33	33	34	35	36	36	37	37	38	38	38	39	39
	Long.	24	23	19	16	13	9	7	6	3	1 W.	3 E.	7	9
No. 26. DER WEST ... ... 6th January to 2nd April.	Lat.	41	41	41	41	41	41	41	41	40	41	41	41	42
	Long.	11	15	17	20	25	28	33	38	41	42	47	52	57
No. 27. DER NORD ... ... 3rd January to 14th April.	Lat.	34	35	35	36	37	37	37	38	38	39	39	39	39
	Long.	19	16	16	13	10	8	6	3	1 W.	3 E.	6	10	13
No. 28. DER SUD ... ... 4th January to 23rd April.	Lat.	25	26	28	30	32	34	34	37	38	38	39	39	39
	Long.	25	25	24	22	19	17	14	9	5	1 W.	2 E.	5	8
No. 29. HORIZONT ... ... 18th January to 30th April.	Lat.	35	35	35	35	31	37	38	38	40	41	41	41	42
	Long.	2 W.	0.4 E.	3	5	9	11	15	16	17	20	23	25	27
No. 30. FIDES ... ... (from New York to Melbourne) 25th December to 25th April.	Lat.	3	3	5	6	9	11	14	17	20	22	23	25	27
	Long.	21	21	22	24	25	26	27	27	28	28	27	27	25
No. 31. VON BERG ... ... 3rd January to 22nd April.	Lat.	32	33	34	35	35	37	37	38	38	38	38	38	38
	Long.	13	11	9	6	5	3	1 W.	0 E.	2	3	5	10	13
No. 32. KENT ... ... 13th February to 6th May, 1859.	Lat.	41	41	41	41	43	43	43	44	44	45	45	45	45
	Long.	16	20	24	27	31	36	41	46	52	57	64	69	75
No. 33. DIRK ARNOLD ... ... 10th January to 10th April.	Lat.	41	43	44	45	46	46	46	48	48	48	48	48	48
	Long.	5 W.	0	4 E.	7	12	16	17	20	22	26	32	35	39
No. 34. BLUE JACKET ... ... 9th February to 13th May.	Lat.	25	25	26	28	31	34	35	38	38	38	41	44	44
	Long.	18	16	17	19	19	18	15	14	9	9	11	6 W	2 E.
No. 35. ARABIAN ... ... 21st February to 23rd May.	Lat.	38	38	38	40	40	40	41	41	42	42	43	44	44
	Long.	22	17	14	12	7	5	1 W.	3 E.	8	12	16	20	23
No. 36. QUEEN OF THE CLYDE 15th January to 29th April.	Lat.	33	34	36	37	39	39	39	40	41	43	43	44	44
	Long.	21	18	14	12	9	6	6	6	3 W.	2 E.	4	8	12
No. 37. ELISE RUEBEKE ... ... 28th February to 7th June.	Lat.	33	34	35	35	37	40	41	40	40	41	41	39	38
	Long.	10	9	4	2	2 W.	0 E.	5	9	12	15	20	21	26
No. 38. STAATSRAAD VAN ERRICK 26th February to 5th June.	Lat.	32	34	36	38	38	39	40	41	42	43	45	45	46
	Long.	28	26	23	19	17	14	12	10	7	2 W.	2 E	7	11
No. 39. NEPAUL ... ... February to June.	Lat.	15	16	18	20	21	21	21	23	26	28	29	31	32
	Long.	34	34	36	36	35	33	32	34	34	33	31	29	25

VOYAGES FROM EUROPE TO MELBOURNE—*continued.*

NAME OF SHIP.		NUMBER OF DAYS OUT.												
		66.	67.	68.	69.	70.	71.	72.	73.	74.	75.	76.	77.	78.
No. 21. LIGHTNING ... ... 31st January to 18th April.	Lat.	43	45	46	46	46	46	47	46	44	42	40	39	...
	Long.	108	109	112	115	118	112	125	130	135	138	140	142	...
No. 22. HENRIETTA HELENA ... 21st October to 6th February.	Lat.	41	41	40	40	40	40	40	39	39	39	39	39	39
	Long.	41	45	49	53	57	60	63	66	68	70	73	76	80
No. 23. JOHANNES ... ... 6th December to 31st March.	Lat.	38	38	37	38	38	38	37	37	37	40	41	41	40
	Long.	2 W.	1 E.	5	9	13	16	19	21	23	23	24	27	31
No. 24. MAGDALENA ... ... 3rd January to 31st March.	Lat.	44	44	44	44	43	44	44	43	42	42	43	43	42
	Long.	65	70	73	71	75	79	88	88	91	96	100	103	112
No. 25. DER OST ... ... 3rd January to 18th April.	Lat.	39	39	40	41	40	41	40	40	...	...	40	40	40
	Long.	14	15	17	20	23	26	30	31	...	...	44	45	47
No. 26. DER WEST ... ... 6th January to 2nd April.	Lat.	42	41	41	41	41	41	41	41	41	41	41	41	41
	Long.	62	66	70	75	80	84	88	92	97	101	105	110	119
No. 27. DER NORD ... ... 3rd January to 14th April.	Lat.	39	41	41	40	40	41	41	42	41	41	41	42	42
	Long.	13	15	20	24	22	31	29	32	37	46	50	54	58
No. 28. DER SUD ... ... 4th January to 23rd April.	Lat.	39	40	40	40	39	39	40	40	39	39	39	39	39
	Long.	9	13	18	21	23	27	30	35	38	40	43	45	47
No. 29. HORIZONT ... ... 18th January to 30th April.	Lat.	42	42	42	42	42	42	42	42	42	42	42	42	41
	Long.	31	33	37	40	43	47	50	53	57	62	65	70	72
No. 30. FIDES... ... ... (from New York to Melbourne) 25th December to 25th April.	Lat.	28	30	33	35	38	38	38	39	39	40	41	41	41
	Long.	23	21	18	15	12	10	7	4	2	2	6	10	14
No. 31. VON BERG ... ... 3rd January to 22nd April.	Lat.	38	38	39	40	40	40	40	40	40	40	40	39	40
	Long.	15	16	18	21	24	27	29	33	37	41	43	46	48
No. 32. KENT ... ... 13th February to 6th May, 1859.	Lat.	45	45	45	45	46	45	45	46	46	45	45	44	44
	Long.	79	82	85	89	92	95	98	104	106	109	114	115	119
No. 33. DIRK ARNOLD ... ... 10th January to 10th April.	Lat.	48	49	48	49	48	48	48	48	48	47	48	48	48
	Long.	43	48	53	58	62	67	72	76	79	83	86	91	95
No. 34. BLUE JACKET ... ... 9th February to 13th May.	Lat.	44	44	44	44	44	43	42	43	43	44	43	44	44
	Long.	6	11	18	22	26	31	37	41	45	51	54	59	65
No. 35. ARABIAN ... ... 21st February to 23rd May.	Lat.	44	45	45	46	45	44	45	45	45	45	45	44	44
	Long.	28	33	39	46	52	54	60	65	67	73	78	84	89
No. 36. QUEEN OF THE CLYDE ... 15th January to 29th April.	Lat.	44	45	44	44	44	44	44	45	45	44	45	45	45
	Long.	16	21	25	26	29	30	33	38	41	44	48	50	54
No. 37. ELISE RUEBEKE ... 28th February to 7th June.	Lat.	38	39	39	39	40	41	42	42	42	42	42	42	43
	Long.	28	32	35	37	42	49	49	54	59	65	66	69	73
No. 38. STAATSRAAD VAN ERRICK 26th February to 5th June.	Lat.	46	46	46	46	46	46	45	46	46	46	47	47	46
	Long.	16	19	25	31	37	43	49	50	56	57	60	63	65
No. 39. NEPAUL ... ... February to June.	Lat.	33	33	33	33	34	35	36	37	37	37	37	38	36
	Long.	22	19	18	16	13	10	6	3 W.	1 E.	5	9	12	17

VOYAGES FROM EUROPE TO MELBOURNE—*continued.*

NAME OF SHIP.		NUMBER OF DAYS OUT.													
		80.	81.	82.	83.	84.	85.	86.	87.	88.	89.	90.	91.	92.	93.
No. 21. LIGHTNING ... ... 31st January to 18th April.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 22. HENRIETTA HELENA ... 21st October to 6th February.	Lat.	38	38	38	38	37	38	38	38	37	39	40	41	40	40
	Long.	87	92	97	100	104	108	112	116	118	117	118	123	126	130
No. 23. JOHANNES ... ... 8th December to 31st March.	Lat.	41	42	41	41	41	42	41	40	40	40	40	40	40	40
	Long.	36	38	41	45	49	53	55	58	61	66	70	72	78	80
No. 24. MAGDALENA... ... 2nd January to 31st March.	Lat.	42	42	41	41	40	40	40	39	Cape	Bay.	...	...	...	...
	Long.	115	125	125	127	131	133	137	141	Otway.		...	...	...	...
No. 25. DER OST ... ... 3rd January to 18th April.	Lat.	41	39	39	39	39	39	39	39	39	39	38	36	38	39
	Long.	55	60	64	67	72	76	80	84	88	92	94	96	97	99
No. 26. DER WEST ... ... 6th January to 2nd April.	Lat.	40	40	40	40	39	40	39	Cape	Bay.	...	...	...	...	...
	Long.	122	124	129	131	136	140	142	Otway.		...	...	...	...	...
No. 27. DER NORD ... .. 3rd January to 14th April.	Lat.	41	41	43	41	41	41	41	40	40	40	40	40	40	40
	Long.	66	70	74	79	83	87	91	96	99	103	105	107	110	113
No. 28. DER SUD ... ... 4th January to 23rd April.	Lat.	40	40	40	40	39	39	39	38	38	38	37	38	39	40
	Long.	52	57	61	65	70	74	79	83	86	88	88	89	91	94
No. 29. HORIZONT ... ... 18th January to 30th April.	Lat.	41	41	41	41	42	41	41	42	43	44	44	43	42	41
	Long.	72	81	84	87	90	92	94	98	101	105	107	112	116	119
No. 30. FIDES ... ... (From New York to Melbourne) 25th December to 25th April.	Lat.	41	41	41	41	40	41	41	40	40	40	39	39	39	39
	Long.	21	25	29	32	33	35	39	34	44	47	50	53	56	60
No. 31. VON BERG .. ... 3rd January to 22nd April.	Lat.	40	40	39	39	39	39	39	40	39	38	38	37	37	38
	Long.	55	59	63	67	71	75	78	83	87	90	92	93	95	98
No. 32. KENT ... ... 13th February to 6th May, 1859.	Lat.	42	41	40	39	...	...	...	...	...	...	...	...	...	...
	Long.	129	133	137	141	...	...	...	...	...	...	...	...	...	...
No. 33. DIRK ARNOLD ... 10th January to 10th April.	Lat.	48	46	46	45	45	45	43	42	41	40	39	39	...	...
	Long.	102	107	111	115	119	122	126	129	133	137	140	143	...	...
No. 34. BLUE JACKET ... 9th February to 13th May.	Lat.	45	44	44	44	44	44	44	44	44	44	43	43	42	42
	Long.	77	82	87	93	98	101	107	112	117	122	128	133	138	139
No. 35. ARABIAN .. ... 21st February to 23rd May.	Lat.	44	43	42	41	42	42	41	40	40	39	39	Cape	...	...
	Long.	96	102	108	112	116	119	125	130	134	138	142	Otway.	...	...
No. 36. QUEEN OF THE CLYDE 15th January to 29th April.	Lat.	46	46	46	46	46	46	46	46	46	45	45	45	45	44
	Long.	62	67	71	76	81	86	89	91	95	97	98	102	104	109
No. 37. ELISE RUEBEKE ... 28th February to 7th June.	Lat.	43	41	38	38	38	39	39	39	38	39	40	40	41	41
	Long.	77	83	83	85	87	89	91	96	97	100	105	112	116	118
No. 38. STAATSRAAD VAN ERRICK 26th February to 5th June	Lat.	46	44	45	46	46	46	46	46	45	45	45	43	43	43
	Long.	70	71	73	77	80	85	90	95	99	103	106	111	114	118
No. 39. NEPAUL ... ... February to June.	Lat.	39	39	39	39	39	39	39	40	39	39	39	39	39	39
	Long.	23	26	31	34	38	43	46	50	53	57	60	65	68	71

VOYAGES FROM EUROPE TO MELBOURNE—*continued.*

NAME OF SHIP.		NUMBER OF DAYS OUT.												
		94.	95.	96.	97.	98.	99.	100.	101.	102.	103.	104.	105.	106.
No. 21. LIGHTNING ... ... 31st January to 18th April.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 22. HENRIETTA HELENA ... 21st October to 6th February.	Lat.	40	40	41	39	39	Cape Otway.	...	...	...	...	...	...	...
	Long.	131	133	137	140	140		...	...	...	...	...	...	...
No. 23. JOHANNES ... ... 8th December to 31st March.	Lat.	40	40	39	38	39	39	39	39	40	40	40	40	40[1]
	Long.	82	83	87	87	91	94	98	102	106	110	114	119	121
No. 24. MAGDALENA ... ... 3rd January to 31st March.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 25. DER OST ... ... 3rd January to 18th April.	Lat.	39	40	40	40	40	40	40	40	40	40	40	40	40
	Long.	101	105	109	112	117	119	123	124	125	126	127	131	135
No. 26. DER WEST ... ... 6th January to 2nd April.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 27. DER NORD ... ... 3rd January to 14th April.	Lat.	40	41	41	40	40	40	39	43	Cape Otway.	...	...	...	...
	Long.	116	121	125	129	133	136	139	141		...	...	...	...
No. 28. DER SUD ... ... 4th January to 23rd April.	Lat.	40	40	40	41	41	41	41	41	41	41	41	41	40[2]
	Long.	98	102	106	109	114	117	117	118	120	123	127	130	134
No. 29. HORIZONT ... ... 18th January to 30th April.	Lat.	41	41	41	40	40	40	40	40	39	Cape Otway.	...	...	...
	Long.	122	125	126	131	132	135	139	140	140		...	...	...
No. 30. FIDES ... ... (from New York to Melbourne) 25th December to 25th April.	Lat.	39	39	39	39	39	39	39	39	39	39	39	39	39[3]
	Long.	64	67	68	71	75	79	83	85	87	91	92	95	98
No. 31. VON BERG ... ... 3rd January to 22nd April.	Lat.	38	39	39	39	40	40	40	39	40	40	40	41	41[4]
	Long.	101	104	108	112	115	117	120	121	121	123	124	128	132
No. 32. KENT ... ... 13th February to 6th May, 1859.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 33. DIRK ARNOLD ... ... 10th January to 10th April.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 34. BLUE JACKET ... ... 9th February to 13th May.	Lat.	Cape Otway.	...	...	...	...	...	...	...	...	...	...	...	...
	Long.		...	...	...	...	...	...	...	...	...	...	...	...
No. 35. ARABIAN ... ... 21st February to 23rd May.	Lat.	...	...	...	...	...	...	...	...	...	...	...	...	...
	Long.	...	...	...	...	...	...	...	...	...	...	...	...	...
No. 36. QUEEN OF THE CLYDE 15th January to 29th April.	Lat.	44	44	44	44	43	42	43	42	41	42	41	39	...
	Long.	111	115	119	121	123	125	129	133	133	135	138	142	...
No. 37. ELISE RUEBEKE ... ... 28th February to 7th June.	Lat.	41	40	40	40	40	39	39	...	...	...	...	...	...
	Long.	122	126	130	136	138	142	145	...	...	...	...	...	...
No. 38. STAATSRAAD VAN ERRICK 26th February to 5th June.	Lat.	44	43	43	43	Cape Otway.	40	39	...	...	...	...	...	...
	Long.	122	126	130	133		141	143	...	...	...	...	...	...
No. 39. NEPAUL ... ... February to June.	Lat.	39	39	39	38	38	38	38	38	38	38	39	39	39[5]
	Long.	74	79	82	84	87	90	93	97	100	102	106	111	113

[1] And made Cape Otway eight days later. [2] And four days more. [3] And sixteen days more. [4] And four days more. [5] And ten days more.

161. The two following abstracts, kept by Captain Tobin, Commander of the *Ocean Chief*, have been forwarded to the Observatory for perusal. The first comprises a voyage from Sydney to Liverpool, in the year 1855; and the second, one from Liverpool to Melbourne, in 1856. In the column headed "Thermometer," it is to be understood that A signifies the *air*, and W the *water*; in these instances the barometers used have not been compared with the standards:—

ABSTRACT OF A VOYAGE OF THE SHIP *OCEAN CHIEF*, THOMAS JAMES TOBIN COMMANDER, FROM SYDNEY TO LIVERPOOL, 1855.

DATE.	No. of Days out.	Latitude.	Longitude.	Winds.	No. of Miles on each Day.	Ther.	Bar.	REMARKS.
		° ′	° ′			° A. W.	Inches.	At 9.30 got under way; towed outside of the Heads by the steamer *Huntress;* at 11 a.m. pilot and steamer left; nearly calm; calm, clear, warm weather; sea from the N.E.; at 6 p.m. fine breeze from N.W.
June 4 ...	1	35 35	152 00	N.E. to S.E.	135	65	29·95	Squally; heavy rains; dark and cloudy; high S.W. sea on.
„ 5 ...	2	38 00	153 58	S.E. to N.E.	170	65	29·75	Brisk breezes and cloudy weather; all sail set.
„ 6 ...	3	40 53	156 13	N.E. to S.S.E.	213	64	29·50	First part, brisk breezes, wind and rain; latter part, clear and calm.
„ 7 ...	4	42 00	160 31	S. to S.S.E.	174	60	29·60	Constant rain, squalls, and heavy sea from S.E.
„ 8 ...	5	No obs.	No obs.	S.S.E. to S.E.	120	57	29 60	Constant rains and heavy gales; high seas.
„ 9 ...	6	42 25	160 55	S.E. to S.	30	50 / 54	29·75	Strong gales and constant rain; squalls.
„ 10 ...	7	43 37	163 24	S.S.E. to S.S.W.	121	48 / 53	29·75	First part, strong gales; latter part, nearly calm.
„ 11 ...	8	44 27	163 10	S.S.W. to S.E.	68	50 / 52	29·72	Calm and cloudy throughout, fog, and long westerly swell.
„ 12 ...	9	45 28	163 10	S.S.E. to S.	63	50 / 52	29·55	First part, light airs and rain; latter part, fog and rain.
„ 13 ...	10	47 56	164 01	S.S.W. to S.W.	161	48	29·45	Light airs throughout; drizzling rain and cloudy.
„ 14 ...	11	49 49	167 04	S.S.W. to S.S.E.	182	41 / 46	29·30	First part, nearly calm; latter part, moderate and clear.
„ 15 ...	12	51 21	172 13	S.S.E. to N.W.	210	40 / 45	29·10	Light winds and clear; very variable; latter part, moderate and clear.
„ 16 ...	13	52 20	178 31	S. to N.W.	265	40 / 44	29·50	Light winds, alternately rain and squalls frequent latter part.
„ 17 ...	14	53 23	174 13	S.W. to S.	275	40 / 44	29·20	Strong gales, with sleet and rain; sometimes very clear.
„ 18 ...	15	53 41	169 10	S.S E. to S. and W.	182	40 / 43	29 60	Light, variable weather; but very fine and clear.
„ 19 ...	16	54 15	162 10	S.W., N.W. and N.	253	41 / 42	29·53	First part, light winds and fine; latter part, strong breezes.
„ 20 ...	17	54 28	156 15	N. to N.W.	220	38 / 42 30	29·20	Fine weather throughout; heavy easterly sea.
„ 21 ...	18	54 35	149 57	W. to S.W.	232	35 / 38	29·04	First part, fine and light winds; latter part, sudden shift to S.W.
„ 22 ...	19	54 30	143 34	S.W. to N.	233	37 / 41	28·95	Snow squalls and cold; latter part, fresh north breeze.
„ 23 ...	20	54 30	134 06	N.N.W.	326	40 / 38	29·10	Snow squalls; fine at midnight; fine starlight; rainy at the latter.
„ 24 ...	21	54 42	126 50	N.N.W. to S.W.	250	37 / 43	29·20	Fresh breeze and drizzling rain; latter part, wind S.W., clear and cold.
„ 25 ...	22	55 09	119 02	S.W. to W.	270	40 / 41	29·65	First part, moderate and fine; latter part, fine rain. The nights are very fine and clear. So far I prefer a winter to a summer's passage.
„ 26 ...	23	55 33	112 16	W. to N.W.	234	41 / 41 30	29·45	First part, light winds; latter part, strong and drizzling.
„ 27 ...	24	56 00	104 06	W. to N.N.W.	282	42 / 41	29·10	Strong winds and constant rains; thick fog; high cross sea.
„ 28 ...	25	56 13	96 06	N.W., S.W. & N.W.	268	41 / 40 30	29·25	First part, fresh breeze; midnight fine starlight.
„ 29 ...	26	56 13	88 02	N.W. by N.	270	41	28·95	Moderate and rain; latter part, strong gales and fog.
„ 30 ...	27	56 00	81 34	N.W.	222	40	28·58	Severe gale; rain, sleet, and hail; very bad weather.
July 1 ...	28	56 13	74 53	W. to W.S.W.	235	41 / 40	29·39	First part, strong gale; latter part and middle, moderate.
„ 2 ...	29	56 13	68 56	S.W. to N.E.	202	41½	29·55	Fine clear weather throughout; Diego Ramirez N.N.E. 15 miles; no current.
„ 3 ...	30	57 22	64 07	N. to N.E.	162	40	29·50	Fine serene weather; faint airs and calm; no current.
„ 4 ...	31	56 25	61 50	S.W. to S.S.W.	102	39 / 38	29·80	Fine clear weather and mild; faint airs throughout.
„ 5 ...	32	56 42	57 37	S.W. to S.S E.	194	30 / 39 3	30·03	Fine clear weather; latter part, fresh breeze; strong south current.
„ 6 ...	33	56 31	53 10	W.N.W. and W.	283	39 / 39 35	29·85	Fine clear weather; strong breezes; passed barque *Lady Wharncliff*, that left Sydney 24 days before us.
„ 7 ...	34	55 21	47 53	S.W. and S.S.W.	272	40	30·00	Fresh breezes throughout; clear and cloudy alternately.
„ 8 ...	35	55 42	44 05	S. to S.W.	209	42 20	30·20	Light winds throughout; latter part, calm.
„ 9 ...	36	49 55	41 00	S.W.	168	44 / 47 47	30·22	Light winds and fine weather; small west current.
„ 10 ...	37	47 03	39 14	S.W.	125	50 / 51	30·21	Light winds; fine weather, getting warm.
„ 11 ...	38	44 14	38 14	S.W.	78	53 / 58	30·31	Faint airs and calms, with light showers.

VOYAGE OF THE SHIP *OCEAN CHIEF* FROM SYDNEY TO LIVERPOOL—*continued.*

DATE.	No. of Days out.	Latitude.	Longitude.	Winds.	No. of Miles on each Day.	Ther.	Bar.	REMARKS.
		° ′	° ′			A. °	Inches.	
July 12 ...	39	40 15	36 52	S.W. to N.W.	135	54	30 20	Faint airs throughout; north current.
„ 13 ...	40	37 18	34 10	S.W.	141	54 / 59	30·20	Faint airs; rain squalls; N.E. sea.
„ 14 ...	41	35 30	32 01	S.W., W., and N.W.	141	58	30·00	Faint airs; rain squalls; wind very unsteady from S.W. to N.
„ 15 ...	42	31 55	28 56	N. to N.W.	270	61 / 62	29·92	Fresh breezes and cloudy; middle part, fine and clear.
„ 16 ...	43	29 31	28 45	N.W. to S.W.	140	65	30·20	Faint airs, moderate breezes, and calms.
„ 17 ...	44	27 30	31 09	N.E. to N.N.E.	180	73 / 69	30·02	Strong N.E. and N.N.E. gale; high N.E. sea; dark passing clouds.
„ 18 ...	45	26 38	28 28	N.E. to N. by W.	145	72 / 68	30·10	Strong gale from N.E. to N.N.W.; very heavy N.E. sea.
„ 19 ...	46	24 33	26 32	N. to N. by W.	152	76 / 72	30·22	First part, moderate breeze; middle, light; latter, faint airs.
„ 20 ...	47	24 19	26 19	Calm	21	76 / 72	30·27	Begins calm and ends the same.
„ 21 ...	48	23 34	27 26	Calm	27	72 / 71	30·27	Begins calm and ends the same. Eleven ships in sight.
„ 22 ...	49	22 42	27 50	Calm and variable	75	72 / 71	30·20	Begins calm and ends faint airs.
„ 23 ...	50	20 08	27 51	E. to E.N.E.	156	75 / 72	30·15	First part, calm; middle part, light airs; latter part, moderate.
„ 24 ...	51	16 50	29 55	N.E. by N.	228	79 / 73	30·12	First part, moderate breeze; middle part, squally—and wind hangs most obstinately at N.E., heavy clouds rising, and ends with faint airs.
„ 25 ...	52	13 27	30 54	N.E. to E.N.E.	203	78 / 75	30·09	Strong squalls, with rain; calm and moderate breezes; no S.E. trades yet; dense heavy clouds rising. In every particular have found Horsburg wrong relating to trades.
„ 26 ...	53	9 31	31 19	N.E., E., & N. by W.	237	75 / 77	30 10	First part, moderate breeze; middle part, moderate breeze; latter, rain and calm.
„ 27 ...	54	5 52	30 41	N.E. to E.N.E.	215	79 / 78	30·00	First part, dead calm; middle and latter part, moderate breeze.
„ 28 ...	55	2 02	30 19	E. by N. to E.	232	80 / 77	30·05	Moderate and clear; middle and latter part, light.
„ 29 ...	56	1 07	30 41	S.E.	189	78 / 79	30·04	Light S.E. trades, with rain squalls; S.E. sea; strong westerly current, 30 miles in 24 hours; a S.E. sea.
„ 30 ...	57	4 29	30 19	S.E. to S.S.E.	202	83 / 80	30·01	Light and moderate alternately, with rain squalls; strong W. current, 31 miles in 24 hours.
„ 31 ...	58	6 32	30 49	S.E., S.W.	125	80 / 79	30·01	First part, wind S.W., heavy rains, S.E. sea; latter part, calm.
Aug. 1 ...	59	9 47	30 51	S.W., W., N.W.	195	77	29·97	First part, light; middle, strong; latter, calm and moderate.
„ 2 ...	60	11 05	29 58	N.E., S E., S.W.	100	80	30 05	First part, calm; light airs and faint airs: strong south current, 47 miles in two days; cross sea.
„ 3 ...	61	12 07	29 58	S.S.W. and calm	62	87	30·00	Faint airs and calm, light breeze, frequent rain squalls.
„ 4 ...	62	14 41	33 0	N.N.E. and N.E.	236	75	30·00	Fresh N.N.E. breeze, light rain squalls; latter part, moderate.
„ 5 ...	63	18 04	34 0	N.N.E. and E.N E	235	75	30·05	Fresh breezes throughout; current S., 40 miles in 24 hours; latter part, fresh puffs; carried away foretop-gallant sail—say mast.
„ 6 ...	64	21 41	36 40	N.E. by E.	250	76	30·10	Fresh breezes, with rain; current setting S., 30 miles in 24 hours. Spoke brig *C. Girvan*, 90 days from Callao, bound to Queenstown.
„ 7 ...	65	25 11	38 40	N E. by E.	241	79	30 20	Light trades and fine weather.
„ 8 ...	66	27 40	39 16	N.E. and calm	119	86	30·30	Light airs throughout; experienced constant current setting S., and diminishing as we proceed N. Only 16 miles this day.
„ 9 ...	67	29 49	40 26	E.N.E. and calm	126	80	30·25	Faint airs and calm; 130° in the sun, and 90° in the shade.
„ 10 ...	68	30 37	40 33	Calm and variable	42	84	30·10	Calm; current setting 16 miles to the southward in 24 hours.
„ 11 ...	69	32 56	39 29	W.	140	77	30·07	Faint airs; latter part, calm, with cloudy weather.
„ 12 ...	70	34 06	38 26	Variable	80	80	30·10	Calm and rain throughout; 12 miles north current.
„ 13 ...	71	35 53	38 0	Variable	110	87	30·10	First part, light; middle and latter part, high north sea.
„ 14 ...	72	37 31	36 42	W., N.W., &c.	148	75	30·07	First part, light winds and cloudy; latter, fresh breezes and cloudy.
„ 15 ...	73	38 08	32 42	N.N.E.	220	76	30·05	Fresh breeze and cloudy, and cloudy throughout; no sea weed.
„ 16 ...	74	38 24	29 25	N.E. and N.N.E.	177	76	30·07	First part, fresh; latter part, light. Island Pico E. 60 miles.
„ 17 ...	75	39 02	29 29	Calm and N. by E	87	83	30·15	First part, calm; middle, rather light; latter, moderate.
„ 18 ...	76	40 22	28 22	Fresh to N.E.	90	80	...	First part, fresh and squally; middle and latter parts, very light; found an extraordinary current setting 24 miles S.W. in 24 hours.
„ 19 ...	77	40 54	25 32	N.N.E. and N.E.	197	73	30·20	
„ 20 ...	78	40 58	23 48	N.E. and N.W.	115	72	30·20	First part, moderate and light; latter part, nearly calm.
„ 21 ...	79	42 56	22 27	N.W.	150	73	30·19	Light breeze, light airs, and faint airs.
„ 22 ...	80	43 37	22 0	Variable	45	73	30·00	Faint airs and calm; lots of medusæ.
„ 23 ...	81	44 24	20 46	Variable	45	72	29·90	Calms and faint airs, sea stagnant.
„ 24 ...	82	47 37	16 31	N.W.	268	67	29·45	Fresh breezes with rain squalls.
„ 25 ...	83	50 29	10 59	W.N.W.	290	60	29·55	Strong breeze with heavy rain squalls.
								At daylight made the Saltees; passed close to the Tuskar at 4 p.m.; passed Holyhead at 5 30 p.m.; got a pilot off Cape Lynas; made all sail at 10 30; came to an anchor. I now consider my passage up, making 83 days.

162. ABSTRACT OF A VOYAGE OF THE SHIP *OCEAN CHIEF*, THOMAS JAMES TOBIN COMMANDER, FROM LIVERPOOL TO MELBOURNE, 1856.

DATE.	No. of Days out.	Latitude.	Longitude.	Winds.	No. of Miles on each Day.	Ther.	Bar.	REMARKS.
1856.		° ′	° ′			°	Inches.	
Aug. 6 ...	...	...	...	...	...	...	...	Taken in tow by the steamer *Blazes*; no wind throughout.
„ 7 ...	...	...	...	...	...	...	...	Passed the *Bencoolen*.
„ 7 ...	1	...	...	...	...	...	...	Steamer left us outside Tuskar; light airs and fine; bar. high.
„ 8 ...	2	48 27	9 53	S.S.W. to W.	125	...	...	Strong S.S.W. breeze, head sea; latter, strong breeze and drizzling rain.
„ 9 ...	3	46 41	8 31	S.W.	130	...	...	Commences moderate; high westerly sea; ship pitching heavily; second officer and one man washed overboard; lifeboat lowered and saved them.
„ 10 ...	4	46 21	8 31	S.W.	130	...	...	Commences strong gales; noon, moderate; latter, rain and strong breezes.
„ 11 ...	5	45 05	10 00	W.S.W. & S.W. by W.	130	...	...	Commences with strong breezes and clear weather; latter, light airs, &c.
„ 12 ...	6	44 35	10 27	W.S.W.	130	...	...	Commences light breezes and high head sea; latter, rain squalls, and cloudy.
„ 13 ...	7	44 00	13 13	N.W.	130	...	...	Commences light airs and calm, very hot; latter, faint airs and calm.
„ 14 ...	8	41 49	14 07	N.W.	80	...	...	Commences light airs and calm; latter, faint airs and calm.
„ 15 ...	9	41 38	15 49	N.W.	80	A. 70 W. 70	29 80	Commences light airs, high head sea; middle, strong gales and rain; latter, same.
„ 16 ...	10	38 05	15 41	W. by N., W.N.W.	213	A. 73 W. 71	30·10	Commences fine, moderate breezes; latter, light breeze and clear.
„ 17 ...	11	34 46	17 00	N.N.W.	219	A. 78 W. 71	30·15	Commences fine, winds and clear; latter, light and cloudy.
„ 18 ...	12	32 10	19 42	N.E.	202	A. 76½ W. 73	30·20	Commences fine, light winds and cloudy; latter, light breezes and small rain.
„ 19 ...	13	29 54	20 54	N.E.	150	A. 76 W. 74	30 20	Commences light airs, cloudy, very smooth sea; latter, moderate and light airs.
„ 20 ...	14	27 19	22 00	N.E. to E.S.E.	160	A. 74 W. 75	30·20	Commences light trades and cloudy; latter, rain and dirty looking.
„ 21 ...	15	24 06	23 00	S.E. trades	200	A. 76 W. 76	30·20	Commences light trades and cloudy; latter, light winds and cloudy.
„ 22 ...	16	20 05	24 57	S.E. trades	220	A. 83 W. 77	30·10	Commences moderate trades, rain, squalls; latter, moderate breeze and hazy.
„ 23 ...	17	17 41	25 40	S.E. trades	200	A. 88 W. 77	...	Commences light winds and hazy; latter, moderate breeze and hazy.
„ 24 ...	18	15 21	26 20	N.E.	140	A. 89 W. 82	30·08	Commences light trades and hazy, current setting N.; latter, light and hazy.
„ 25 ...	19	12 59	26 42	E.	150	A. 81	...	Commences light breezes and clear; latter, faint airs and calm.
„ 26 ...	20	11 30	26 24	S.S.E.	89	W. 81	30·00	Commences faint airs and calm, strong N.E. current; latter part calm.
„ 27 ...	21	11 09	26 40	S.W.	21	A. 80 W. 80	30·00	Commences faint airs and calm, high head sea; latter, moderate breezes.
„ 28 ...	22	8 15	24 04	S.W.	150	A. 82 W. 80	30·00	Commences moderate breeze; latter, squally, variable, and calm.
„ 29 ...	23	8 00	22 57	...	...	A. 81 W. 81	30·00	Commences faint airs and calm; ends same, with thick rainy weather.
„ 30 ...	24	6 36	21 00	S.W.	...	A. 82 W. 81	30·00	Commences faint airs and calm; ends same, with squally and heavy rain.
„ 31 ...	25	4 58	20 00	...	150	...	...	Commences heavy rain squalls; ends strong breeze, and very disagreeable weather.
Sept. 1 ...	26	4 07	23 58	...	...	...	...	Commences strong breezes and high sea; midnight, fine S.W. breeze.
„ 2 ...	27	1 57	26 20	S.E. by S.	140	...	...	Fresh S.E. trades.
„ 3 ...	28	0 48 S	27 47	...	...	...	...	Commences fresh trades and fine weather; latter, light trades and squally.
„ 4 ...	29	3 50	29 26	...	210	...	...	Commences light trades and squally; latter, fine breeze, but squally.
„ 5 ...	30	5 48	34 47	Southerly	170	A. 80 W. 81	...	Commences strong wind and S. sea; ends with disagreeable weather.
„ 6 ...	31	7 16	34 30	S. to S.W.	...	A. 80 W. 79	30·10	Commences disagreeable weather, high head sea; latter part cloudy.
„ 7 ...	32	7 46	31 48	Southerly	162	A. 80 W. 78	30·10	Commences squally and heavy head sea; latter, very severe squalls.
„ 8 ...	33	10 16	34 00	S.S.W. to S.S.E.	170	A. 77 W. 78	30·10	Commences with dirty looking weather; hard squalls, heavy sea, and calm.
„ 9 ...	34	10 16	34 00	...	...	A. 79 W. 76	30·10	Commences calm, with S.S.W. sea, very warm; latter part, heavy squalls, and high sea.
„ 10 ...	35	12 56	34 40	S.E. to S.E. by E.	165	A. 76 W. 79	30·20	Commences strong squalls, wind, and rain; latter, strong squalls and high sea.
„ 11 ...	36	16 02	35 49	...	...	A. 77 W. 76	30·20	Commences heavy squalls of rain and wind; ends with heavy squalls and high sea.
„ 12 ...	37	19 22	36 26	S.E. by E.	...	A. 74 W. 75	30·35	Commences strong squalls and high head sea; latter part, heavy squalls and high sea.
„ 13 ...	38	22 57	36 44	...	...	A. 75 W. 72	30·38	Commences strong rain squalls, and high head sea; latter part, heavy squalls and high sea.
„ 14 ...	39	26 44	30 43	E.S.E.	227	A. 72 W. 68	30·40	Commences fresh squalls, and high head sea; latter part, fine weather and head sea.

VOYAGE OF THE SHIP *OCEAN CHIEF* FROM LIVERPOOL TO MELBOURNE—*continued.*

DATE.	No. of Days out.	Latitude.	Longitude.	Winds.	No. of Miles on each Day.	Ther.	Bar.	REMARKS.
1856.		° ′	° ′			°	Inches.	
Sept. 15 ...	40	30 00	34 14	E.	240	A. 70 W. 65	30·40	Commences moderate breezes; latter part, light winds and clear.
„ 16 ...	41	32 44	31 05	E. by N.	220	A. 72 W. 63	30·45	Commences light winds and clear weather; latter, light winds and clear.
„ 17 ...	42	34 35	27 20	E.N.E. and var.	240	A. 69 W. 63	30·35	Commences clear light winds; latter part, moderate breezes and drizzling rain.
„ 18 ...	43	36 09	22 39	N.N.E.	240	A. 66 W. 58	30·20	Commences damp drizzling weather; latter, light breezes and hazy.
„ 19 ...	44	37 44	18 00	N.N.E.	240	A. 66 W. 58	30·22	Commences light winds and hazy weather; latter part, moderate breeze and clear.
„ 20 ...	45	39 04	13 40	N.N.W.	220	A. 58 W. 63	30·20	Commences light winds and clear weather; latter part, dull hazy weather, heavy sea getting up.
„ 21 ...	46	41 05	7 00	...	340	A. 53 W. 51	29·90	Commences strong squalls, and high N.W. sea; made Gough Island, S.E., distant five miles; latter part, clear cold weather.
„ 22 ...	47	41 47	2 34	Westerly	205	A. 60 W. 49	30·10	Commences with strong squalls and clear weather; latter part, light winds and clear.
„ 23 ...	48	42 39	1 50 E	S.W. to N.N.W.	220	A. 52 W. 48	30·10	Commences with light breezes and clear weather; latter part, moderate and clear weather.
„ 24 ...	49	43 20	6 30	N.W.	240	A. 50 W. 48	30·00	Commences with moderate breezes and clear weather; latter part, light breezes, cloudy, and drizzling.
„ 25 ...	50	44 2	12 41	W.S.W.	260	A. 42 W. 45	29·85	Commences with moderate breezes and clear weather; latter part, light breezes and cloudy.
„ 26 ...	51	44 51	18 10	W.S.W.	235	A. 42 W. 44	30·00	Commences with fine breezes and passing clouds, very light winds and fine.
„ 27 ...	52	45 27	22 25	S. to E.S.E.	170	A. 41 W. 42	30·05	Commences with fine breezes, light and clear; very light winds and fine.
„ 28 ...	53	46 02	25 34	E. to E.N.E.	150	A. 42 W. 42	30·00	Commences with light breezes, and clear; latter part, fresh breezes, thick fog and rain.
„ 29 ...	54	47 03	30 58	E.N.E.	228	A. 46 W. 44	29·30	Commences with fresh breezes and thick fog; latter part, fog and heavy squalls.
„ 30 ...	55	...	...	N. to N.W.	350	A. 44 W. 42	29·30½	Commences with strong squalls and thick weather; latter part, strong gales, and very dirty weather.
Oct. 1 ...	56	47 36	44 10	N.N.E.	252	A. 48 W. 42	29·80½	Commences with strong gales, high sea, and heavy rain; latter part, strong gales, high sea, snow, &c.
„ 2 ...	57	47 57	50 12	W. by N. to N.	230	A. 38 W. 42	28·70	Commences with very severe gales and snow squalls; latter part, moderate and clear.
„ 3 ...	58	47 41	56 57	N.W.	260	A. 42 W. 39	30·00	Commences with moderate winds and clear weather; latter part, strong winds and clear weather.
„ 4 ...	59	47 37	64 29	N.N.W.	302	A. 42 W. 39	29·80	Commences with fresh breezes and squally weather; at night, began to clear off.
„ 5 ...	60	47 42	71 01	N.N.W.	240	A. 40 W. 38	30·00	Commences with light breezes and clear weather; latter part, light breezes and cloudy; ice seen to-day.
„ 6 ...	61	47 32	76 01	N.N.E.	203	A. 42 W. 39	...	Commences with strong breezes and cloudy weather; latter part, light breezes, plenty of rain.
„ 7 ...	62	47 21	80 40	N.W.	225	A. 43 W. 40	29·75	Commences with light winds, rainy weather; latter part, strong hail squalls.
„ 8 ...	63	47 03	90 19	W.N.W.	345	A. 40 W. 42	29·80	Commences with strong hail squalls and high head sea; latter part, fresh breezes and hail squalls.
„ 9 ...	64	...	...	W. by N.	287	A. 42 W. 42	29·75	Commences with fresh breezes and hail squalls; latter part, lighter breezes, high W. sea.
„ 10 ...	65	46 19	99 34	W.N.W.	261	A. 46 W. 44	29·70	Commences with fresh winds and cloudy weather; latter part, squally and brisk winds.
„ 11 ...	66	46 14	108 56	Westerly	260	A. 44 W. 42	29·60	Commences with moderately strong winds; latter part, light winds and cloudy.
„ 12 ...	67	45 29	110 39	N. to S.S.W.	240	A. 39 W. 48	29·50	Commences with light winds and cloudy weather; latter part, fresh breezes and clear.
„ 13 ...	68	44 56	116 30	W.	250	A. 47 W. 52	29·60	Commences with brisk breezes and squalls; latter part, fresh breezes and clear.
„ 14 ...	69	43 27	123 00	W.	408	A. 50 W. 49	29·75	Commences with brisk breezes and rain squalls; latter part, fresh winds and hazy weather.
„ 15 ...	70	41 44	128 25	W.	240	A. 50 W. 54	29·80	Commences with brisk winds and passing squalls; latter part, fresh winds and fine weather.
„ 16 ...	71	41 11	133 35	W. to N.N.W.	230	A. 50 W. 56	29 85	Commences with moderate W. winds and fine weather; latter part, strong winds and clear weather.
„ 17 ...	72	40 17	139 36	N.N.W. and squally	270	A. 60 W. 50	29 80	Commences with strong N.N.W. winds and squally; latter part, fine weather and good breeze.
								Commences with moderate N.W. winds, and thick rainy weather. At 6 a.m. made the land, Bold Head, N.E. by E., distant 15 miles. At 8 a.m. made Cape Otway. At 8 p.m. made the Heads Lights, N.E., eight miles. Hove to for a Pilot. Did not get one until daylight. At 10 a.m. moored ship in Hobson's Bay, close to Sandridge.

163. Captain N. Stoertenbecker, of the Hamburg ship *Cesar Godeffroy*, has kindly furnished me with the following Abstract, on the state of the wind and weather during his passage out here in the year 1857.

The barometer and thermometer have been compared with the Melbourne standards and the corrections applied to the readings.

EXTRACT FROM THE JOURNAL OF THE *CESAR GODEFFROY*, CAPTAIN STOERTENBECKER. VOYAGE FROM HAMBURG TO MELBOURNE.

DATE.	LATITUDE.	LONGITUDE.	BAR.	THER.	WINDS.						REMARKS.
					NOON.	4 P.M.	8 P.M.	MIDNIGHT.	4 A.M.	8 A.M.	
1856.	N. ° ′	W. ° ′	Inches.	°							
DEC. 20	48 29	10 29	30·71	53	N.E.byE. 3	N.E.byE. 3	E.S.E. 2	E.S.E. 2	E. by N. 2	E. by N. 2	
„ 21	44 0	12 52	30·41	55	E.S.E. 2	E.S.E. 2	E.S.E. 2	S.E.byE. 2	S E.byE. 3	S.E. 3	
„ 22	41 7	14 51	30·26	58	...	...	...	...	...	...	
„ 23	38 18	16 8	30·21	59	S.E. 2	S.E. 3	S.E. 3	S. 3	S. 3	S. 4	
„ 24	35 2	17 51	30·41	62	E. 3	E. 3	E. 3	E. 3	N.E.byE. 3	N.E. 3	First part fine, and then overcast.
„ 25	32 17	18 48	30·41	65	N.E. 3	N.E. 3	N.E. 3	N.E. 3	N.E. 2	N.E. by N. 2	Squally.
„ 26	30 10	...	29·61	68	N.E. 2	N.E. 2	N. 2	N. 2	N. 2	N. 2	Squally ; overcast.
„ 27	28 11	20 2	30·26	65	N. 1	N.E.	N.E. by N. 1	E.N.E. 2	E.N.E. 2	E. by N. 2	
„ 28	25 26	21 52	30·31	67	E. by S. 2	E. by S.	E. by S. 2	S.E. 3	S.E.by S. 3	S.E. 3	Starlight.
„ 29	22 19	23 28	30·81	68	S.E. 3	S.E.	S.E. 3	S.E.by S. 3	E.S.E. 3	E. by S. 3	Fine weather.
„ 30	19 23	25 2	30·21	71	E. by S. 3	E. by S. 3	E. by S. 3	E. by N. 3	E. by S. 3	E. 3	Fine weather.
„ 31	16 13	26 30	30·16	73	...	...	...	...	...	...	Fresh trade wind.
1857.											
JANUARY 1	12 52	25 17	30·11	73	...	...	...	...	...	...	Hazy air.
„ 2	9 50	23 44	30·11	73	...	...	...	...	...	...	Hazy air ; trade wind.
„ 3	6 51	22 41	30·11	77	...	...	...	...	...	...	Hazy air.
„ 4	6 47	22 58	30·11	78	E. 5	... 0	... 0	... 0	... 0	E.N.E. 1	Thick with rain ; thunder.
„ 5	5 49	23 7	30·11	78	E. 1	E. 1	... 0	... 0	S.E. 1	S.E. by S. 1	Squally.
„ 6	5 31	23 17	30·11	80	S.E.by S. 1	... 0	S.E. 1	... 0	E. by S. 1	E. by S. 1	Covered sky.
„ 7	5 22	22 31	30·16	82	... 0	... 0	... 0	S. 1	S. 1	S. 1	Calm and fine.
„ 8	5 14	21 49	30·11	82	... 0	W. 1	... 0	... 0	S.S.W. 1	S.S.W. 1	Sultry and hot.
„ 9	4 16	21 44	30·06	83	S.W. 0	S.W. 1	N.N.E. 0	E. 0	E. 1	N.N.E. 1	Fine weather.
„ 10	3 42	21 16	30·11	83	... 0	E. 1	E. 1	E. 1	E. 1	N.N.W. 1	Rain and squally ; rain.
„ 11	3 22	21 17	30·21	83	N. 1	N. 1	W. 1	S. 1	W. 1	S. 1	Fine weather.
„ 12	2 51	22 4	30·11	83	...	...	...	...	...	...	Fine weather.
„ 13	...	22 31	30·16	82	...	...	...	...	...	...	Thunder and lightning; fine.
„ 14	2 43	24 15	30·16	84	...	S. 1	S. 1	S. by W. 1	S. by W. 1	S. by W. 1	Covered ; squally ; thick with rain.
„ 15	2 47	24 24	30·16	83	...	...	...	...	...	...	Covered ; heavy thunderstorm.
„ 16	1 52	24 13	30·16	83	S. by W. 2	S. 2	S. 2	E. by N. 2	E.N.E. 2	N.E.byE. 2	Heavy squalls and hard thunderstorm.
„ 17	1 38	24 50	30·16	83	E.N.E. 1	E.N.E. 1	E.N.E. 1	E.N.E. 0-1	E.N.E. 0-1	S.E. by S. 0-1	Fine weather.
„ 18	0 56	24 47	30·11	82	... 0	S.S.E. 1	E.S.E. 1	... 0	E. by N. 1	E. by N. 1	Squally ; thick with rain.
„ 19	0 14	24 34	30·16	83	E.N.E. 1	S. 1	... 0	... 0	... 0	S.S.E. 0-1	Squally, with rain.
	S.										
„ 20	0 5	24 46	30·16	82	E. by N. 1	E. by S. 1	E. 1	S. 1	S. 1	S. 1	
„ 21	0 20	25 29	30·16	83	S. 1	S. by W. 1	S. 1	S. by W. 1	S. by E. 1	S. by E. 1	Clear moonlight.
„ 22	1 0	25 42	30·16	82	S. by E. 0-1	S. by E. 0-1	S.E.by S. 1	S.E. by S. 1	S.E. 1	S.E. by S. 1	Thick, with hard rain.
„ 23	3 1	26 54	30·11	81	S. by E. 1	S. by E. 1	S. by E. 2	S.E. by S. 2	S.S.E. 2	S.E. 2	Covered.

VOYAGE OF *CESAR GODEFFROY* FROM HAMBURG TO MELBOURNE—*continued.*

DATE.	LATITUDE.	LONGITUDE.	BAR.	THER.	WINDS.						REMARKS.
					NOON.	4 P.M.	8 P.M.	MIDNIGHT.	4 A.M.	8 A.M.	
1857.	S. ° ′	W. ° ′	Inches.	°							
JANUARY 24	5 4	28 30	30·16	81	S.S.E. 2	S. by E. 2	S. by E. 2	S.S.E. 2	S.S.E. 2	S.E. 2	High swell; strong rain.
„ 25	7 23	29 44	30·11	81	S.E. by S. 2	S.E. 2	S.E. 3	S.E. 3	S.S.E. 2	S.E. by S. 2	Covered, and then fine weather.
„ 26	8 10	29 58	30·16	82	E.S.E. 2	E.S.E. 2	S.E. by E. 2	S.E. 2	S.E. 2	S.E. by S. 2	Squally.
„ 27	11 12	30 22	30·16	82	S.E. by S. 2	S.E. by S. 2	S.E. by S. 2	S.E. by S. 2	S.E. 2	S.E. 2	
„ 28	14 14	31 2	30·16	83	S.E. 3	S.E. 3	S.E. by E. 3	S.E. by E. 3	S.E. by E. 3	S.E. 3	
„ 29	17 25	31 32	30·16	80	S.E. by E. 2	S.E. 2	S.E. 2	S.E. 2	E.S.E. 2	E. 1	Fine weather; south swell.
„ 30	18 36	31 48	30·16	...	S.E. by S. 2	S.E. 2	S.E. 2	S.E. 2	E.S.E. 2	E. 2	
„ 31	20 42	31 22	30·26	...	E. 2	E.S.E. 2	E.S.E. 2	E. by S. 1	E. 1	E.N.E. 1	Covered sky.
FEB. 1	21 28	30 6	30·16	82	N.E. 2	N.N.E. 2	N.N.E. 2	E.N.E. 2	N.E. 2	N.E. by N. 2	Clear.
„ 2	23 3	28 26	30·31	83	N.E. 1	N.E. 2	N.E. 2	N.E. 1	N.E. by E. 1	N.E. by E. 1	Squally; overcast.
„ 3	24 11	27 47	30·29	83	N.E. 2	N.E. 2	E. 1	E. 1	E.S.E. 1	S.E. by E. 1	Squally, with rain.
„ 4	26 5	27 25	30·31	83	S.E. by E. 2	S.E. by E. 2	E. by S. 2	E. by S. 1	E. by S. 1	E. by S. 1	Clear sky.
„ 5	27 40	26 40	30·36	81	E. 1	S.E. by E. 1	E. by S. 2	E. by S. 1	E. by S. 1	E. by S. 1	Clear sky.
„ 6	28 48	26 58	30·36	82	E.S.E. 2	E.S.E. 2	E.S.E. 2	E.SE. 2	E.S.E. 2	S.E. 2	
„ 7	29 30	27 35	30·41	80	S. 1	S.S.E. 2	S.S.E. 1	S. by E. 1	S. by E. 1	S. by E. 1	
„ 8	29 35	28 7	30·41	82	...	...	...	...	...	...	
„ 9	30 22	26 24	30·11	78	N.W. 1	W.N.W. 1	N.W. 2	N.W. 2	N.W. 2	W.N.W. 2	Fine weather.
„ 10	30 22	22 35	29·71	76	N.W. 3	N.W. 3	N.W. by W. 3	S.S.E. 3	S.E. by S. 3	S.E. by E. 3	High S.W. swell; thick, with rain.
„ 11	33 24	22 49	30·11	76	S.E. by E. 3	S.E. by E. 3	E.S.E. 3	E.S.E. 4	E.S.E. 4	E. by S. 4	Covered sky.
„ 12	33 24	20 40	29·91	73	E. 3	E. by N. 3	E. by N. 4	E.N.E. 4	E.N.E. 5	N. 5-6	Hazy.
„ 13	36 4	17 2	29·91	68	N. 4	N.W. 3	N.W. 2	W. 2	S.W. 2	S.W. 3	Thunder and lightning in E.; squally.
„ 14	37 34	12 33	30·01	67	W. by S. 3	W. 3	W.N.W. 3	N.W. 4	N.W. 5	W.N.W. 4	Squally; light; saw *Inaccessible.*
„ 15	38 56	8 33	30·31	65	N.W. by W. 2	N.W. by W. 2	W.N.W. 3	W.N.W. 2	W.N.W. 2	W.N.W. 2	
„ 16	39 37	5 39	30·41	67	S.W. 2	S.W. 2	S.S.E. 2	... 1	... 1	S. 1	Light breeze; rain shower. The Islands are too far westerly in the charts.
„ 17	40 11	3 09 E.	30·46	67	N. 1	N. by E. 1	N.N.E. 1	N. by E. 1	... 1	N. by W. 1	Squally, with rain.
„ 18	41 5	0 37	30·26	65	N.E. 1	N.E. 2	N.E. 2	N.E. by N. 3	... 2	N.E. by E. 2	Fine weather.
„ 19	41 34	5 24	30·21	64	...	...	...	...	...	...	Covered.
„ 20	41 46	9 11	30·21	64	N. 2	N. 2	N. 2	E. 2	N.E. by N. 2	N.E. 1	Fine weather.
„ 21	41 50	11 10	30·06	61	N. 2	N. 3	N. 2	N. 1	N.W. 1	S.W. 1	Partly covered sky.
„ 22	41 5	15 17	30·01	61	S.W. by W. 2	... 2	W. 2	W.N.W. 2	N. 2	W. 2	Partly covered sky.
„ 23	42 24	19 52	30·01	54	N.W. by W. 3	N.W. by W. 3	W.N.W. 3	W.N.W. 4	W. by N. 4	W. by N. 4	Partly covered sky.
„ 24	42 30	25 16	30·19	53	W. 4	W. 4	N.W. 4	N.W. 4	N.W. 4	N.W. 4	Hard squalls, with hail and rain.
„ 25	42 40	29 57	30·31	55	W.S.W. 3	W.S.W. 2	W.S.W. 2	W.S.W. 2	W. 2	W. 2	
„ 26	42 55	33 39	29·61	56	N.W. 2	W.N.W. 1	N. by W. 1-2	W.N.W. 2	W.N.W. 2	W.N.W. 2	Thick and misty.
„ 27	42 55	37 31	30·51	58	N.W. 2	N.W. 2	N.W. by N. 2	N.W. by N. 1	N.W. by N. 1	N.W. 0-1	Starlight.
„ 28	43 25	40 52	30·36	54	N.N.E. 1	N.E. 1	N.E. 1	N.E. 2	N.E. 2	N.E. 2	Starlight.
MARCH 1	43 40	45 52	30·36	58	N.E. 2	N.E. by N. 2	N.N.E. 3	N.N.E. 3	N.E. by E. 2	N.E. by E. 2	Fine weather, and latter part covered.
„ 2	43 42	49 50	30·61	59	N.E. by E. 3	N.E. by E. 2	N.E. 2	N.E. 2	N.E. 2	N.E. 2	Thick fog.
„ 3	43 38	50 34	30·61	62	...	...	...	...	...	...	Thick fog; warm weather.
„ 4	43 39	52 10	30·51	62	E. 0-1	E. 0-1	E. 1	E. 0-1	N. 0-1	N. 0-1	Thick fog; warm weather.
„ 5	43 18	53 24	30·46	61	N.N.W. 0-1	N.W. 0-1	S.	S. 0-1	E. 0-1	E. 0-1	Thick fog; warm weather.

VOYAGE OF *CESAR GODEFFROY* FROM HAMBURG TO MELBOURNE—*continued.*

DATE.	LATITUDE.	LONGITUDE.	BAR.	THER.	WINDS.						REMARKS.
					NOON.	4 P.M.	8 P.M.	MIDNIGHT.	4 A.M.	8 A.M.	
1857.	S. ° ′	E. ° ′	Inches.	°							
MARCH 6	44 05	54 37	30·41	60	E. 1	S. 1	S.E. 1	S. by E. 1	E.S.E. 1	E.S.E. 1	Fine weather.
„ 7	44 05	55 39	30·31	56	...	...	...	...	...	...	
„ 8	46 54	59 32	30·11	54	E. by S. 1	E. by S. 1	E. 1	E. by N. 2	E.N.E. 2	E.N.E. 2	Thick fog.
„ 9	46 54	65 35	30·01	55	...	...	...	...	...	...	Thick fog; misty.
„ 10	46 28	68 40	30·31	45	N.E. by N. 1	N.E. by N. 2	... 3	S. 2	S. by E. 1	S. by E. 1	Thick rain; clearing up.
„ 11	46 22	69 54	30·31	54	S.S.E. 0-1	S.S.E. 0-1	S.S.E. 0-1	S.S.E. 0-1	N.W 0-1	N.W. 0-1	Thick rain; high swell from N.W. and E.N.E.
„ 12	46 46	74 53	30·41	50	N.N.W. 2	N.N.W. 2	N.W. 3	N.W. 4	W.S.W. 3	W. 3	Covered; fine weather.
„ 13	46 46	79 54	30·21	46	W. 2	W.N.W. 3	W.N.W. 3	N.W.byW. 3	N.W.byW. 2	N.W.byW. 2	Hazy.
„ 14	46 58	84 10	30·11	47	N.W.byW. 2	W.N.W. 1	W.N.W. 1	W.N.W. 1	W.N.W. 1	W.N.W. 2	Covered sky.
„ 15	47 30	89 57	29·81	47	N.W. 1	N.N.W. 1	N. 2	N. 3	N. 3	N. 3	Thick fog and rain.
„ 16	47 30	95 27	29 41	46	...	...	...	...	...	...	Thick fog and rain.
„ 17	46 22	101 47	30·11	50	N. by E. 4	N.N.E. 4	N.N.E. 4	N. by E. 5	N. by E. 4	N. by E. 4	Thick fog and rain.
„ 18	45 59	108 11	29·91	52	N. by E. 4	N.N.E. 5	N.N.E. 5	N.N.E. 5	N N E. 4	N.N.E. 4	Thick fog and rain, and squally.
„ 19	45 45	112 32	29·61	48	N. by E. 2	N.N.E. 2	S. 2	S.W. 3	S.W.byW. 2	S.W.byW. 2	Thick fog and rain, and squally.
„ 20	45 45	116 26	29·41	50	W.S W. 2	W.S.W. 3	W. 3	N.N.W. 2	N.N.W. 2	N.N.E. 2	Begins fine but ends with rain.
„ 21	44 35	119 15	30·11	48	E. 3	N W. 4	W. 5	S.S.W. 4	S.E. by E. 4	S.E. by E. 5	Thick and rain.
„ 22	43 44	122 18	30·16	52	S.E.byS. 3	S.E.byS. 2	S.S.E. 1	W. 2	W. by N. 3	W. by N. 4	Covered.
„ 23	43 00	126 33	30·26	54	W. 2	W. by S. 2	W. by S. 2	W. by N. 1	W. by N. 1	W. by N. 1	Covered.
„ 24	42 15	131 2	30·29	60	W.N.W. 2	N.W. 2	N.W. 2	N.N.W. 1	N.N.W. 2	N. 2	Rainy atmosphere.
„ 25	41 17	136 6	30·01	61	N.W. 2	N.W. 2	N by W. 3	N. by W. 4	N.N.W. 3	N.N.W. 3	Clearing up.
„ 26	40 15	140 34	30·11	64	...	...	...	...	...	...	
„ 27	39 10	143 30	29·81	66	...	...	...	...	...	...	Fine weather.
„ 28	38 47	144 41	29·31	60	E. 2	E. 4	N.N.E. 5	W.N.W. 6	N.W. 6	N.W. 6	Furious storm; hail.
„ 29	39 22	145 27	29·56	68	W.N.W. 6-7	W. by N. 6	W. by N. 6	W. by S. 6	W. by S. 6	W. by S. 6	Heavy squalls, with hail; decreasing.
„ 30	39 22	145 10	30·11	58	W. by S. 6	W.S.W. 6	S.W. 5	S.W. 4	S.W. 3	S.W. 3	Heavy gales.
„ 31	...	...	...	...	S.S.W. 2	S. 2	S. 2	S. 2	S. 2	S. 2	Fine weather.

NOTE.—The small figures below the direction of the wind signify the force of wind by Maury's notation. Barometer and thermometer were registered at noon.

164. Although the following abstract contains no registrations of barometer and thermometer, it was thought advisable to have the state of the weather and wind, as given by Capt. Struyke, published in full, as the information on the South Pacific is, as yet, comparatively incomplete, and every report thereon will be received with interest. The direction of the wind is given three times a day, and the times for which the registrations are meant are for the first part, from noon to 8h. p.m.; for the second, from 8h. p.m. to 4h. a.m.; and for the third, from 4h. a.m. to noon again.

ABSTRACT OF THE LOG OF THE SHIP *CAROLINA*, CAPTAIN STRUYKE, ROTTERDAM, FROM SAN FRANCISCO TO PORT JACKSON, *viâ* HUMBOLDT BAY, 1858.

DATE.	LATITUDE.	LONGITUDE.	WINDS.	REMARKS.		
				FIRST PART.	SECOND PART.	THIRD PART.
1858.	N. ° ′	W. ° ′				
JUNE 10	40 56	127 7·25	S.S.E.	Light winds, dull sky.	Same.	Same.
„ 11	40 30	127 5	S.S.W., S.S.E., S.E.	Same.	Same.	Same.
„ 12	39 22	128 35	N., N.N.W., N.	Same.	Moderate breeze, dull.	Same.
„ 13	38 00	129 44	N., N.N.W., N.	Light winds, dull sky.	Light winds.	Same.
„ 14	37 29	130 0	N.N.W., N.W. by N.	Light winds, dull sky.	Same.	Same.
„ 15	35 58	131 55	N.W., W., N.N.W.	Same.	Moderate, clear sky.	Light winds, dull.
„ 16	34 30	132 39	N.W., N.N.E., N.	Light winds, dull.	Same.	Same.
„ 17	32 35	132 6	W., S.W., W.S.W.	Same.	Moderate, good weather	Moderate, clear.
„ 18	30 29	134 9	W., N.W. by N., N.E.	Moderate breeze, good weather.	Same.	Same.
„ 19	28 40	135 30	N.E., N. by E., N.N.E.	Same.	Same.	Light winds, clear.
„ 20	27 19	137 42	N.N.E., N.N.E., N.E.	Moderate breeze, fine weather.	Same.	
„ 21	26 10	139 36	N.E. by N., N.E.	*N.E. trade winds*, fine.	Same.	Same.
„ 22	24 29	142 5	N.E., N.E., N.E.	Moderate breeze, fine weather.	Same.	Same.
„ 23	22 48	143 51	E.N.E., E., E. by N.	Moderate breeze, squalls.	Moderate trades.	Same.
„ 24	20 19	145 37	E., E., E.N.E.	Moderate breeze, squalls and showers.	Same.	Same.
„ 25	18 9	147 27	E.N.E., E., N.E.	Light winds, fine weather.	Fine weather.	Same.
„ 26	15 53	149 37	E., E., E.	Strong breeze, fine weather.	Same.	Same.
„ 27	12 50	148 20	E., E., E.	Moderate breeze, squalls.	Heavy breeze.	Same.
„ 28	10 3	151 27	E., E., E.	Moderate breeze, fine weather.	Same.	Damp air.
„ 29	7 30	151 34	E., E.N.E., N.E.	*S.E. trades*, squalls.	Short squalls and showers.	
„ 30	5 33	151 41	E.N.E., E., E.S.E.	Light airs, clear sky.	Light winds.	Rain and light.
JULY 1	4 25	151 50	E.S.E., E. by N., E.S.E.	Light wind, squally sky.	Light winds.	Rain and squalls.
„ 2	2 51	152 26	E.S.E., E.S.E., E.S.E.	Moderate breeze, squalls and rain.	Moderate breeze.	Same.
„ 3	0 39	153 44	E.S.E., E.S.E., E.	Light winds, fine weather.	Light and clear.	Same.
	S.					
„ 4	0 54	154 41	E., E., E.S.E.	Light winds, fine weather.	Moderate breeze.	Strong breeze.
„ 5	3 7	156 22	S.E., E.S.E., S.E.	Moderate breeze, fine weather.	...	Same.
„ 6	5 34	156 26	S.E. by E., S. by E., E.	Light breeze, fine weather.	...	Same.
„ 7	7 50	159 13	E., E., E.S.E.	Moderate.	Fine weather.	Blowing rather hard.
„ 8	10 2	161 14	E.S.E., E.S.E., E.S.E.	Moderate breeze, fine weather.	Stiff breeze, clear.	Moderate fine.
„ 9	12 37	163 0	E.S.E., E.S.E., E.S.E.	Moderate breeze, fine weather.	Light and clear.	Same.
„ 10	14 50	164 48	E.S.E., E., N.E.	Light winds, dull, rain.	Showers and squalls.	Fine weather.
„ 11	16 26	165 47	N.E., N.W., S.W.	Light winds, cloudy.	Showers and squalls.	Clear.
„ 12	16 39	165 37	S.S.W., S.W., S. by W.	Clear.	Light winds.	Same.
„ 13	17 41	165 0	S.W., S.S.W., S. by W.	Strong breeze.	Breeze decreasing, fine.	Light wind.
„ 14	18 6	166 4	S. by W., S.S.E., S.	Light wind, fine, S.W. swell.	Same.	Same.

VOYAGE OF THE *CAROLINA* FROM SAN FRANCISCO TO PORT JACKSON—*continued.*

DATE.	LATITUDE.	LONGITUDE.	WINDS.	REMARKS.		
				FIRST PART.	SECOND PART.	THIRD PART.
1858.	S. ° ′	W. ° ′				
JULY 15	19 6	168 59	S.S.E., S.E., S.E.	Moderate breeze, dull sky.	Strong breeze, dull.	Same.
„ 16	19 54	171 15	S.E., S.E., S.E.	Island Sanaar, strong breeze.	Squalls.	Weather finer.
„ 17	20 41	172 26	S.S.E., S.E., Calm.	Moderate wind, clear.	Same.	Same.
„ 18	21 13	172 11	S. by E., E., Calm.	Light wind, fine.	Same.	Same.
„ 19	22 25	173 4	W.N.W., N.W., S.W.	Light wind, fine.	Same.	Light wind, overcast.
„ 20	23 21	174 46	S.W., S.E., Calm.	Breeze springing up, dull.	Same.	Squally, dull.
„ 21	24 49	175 31	N., N.E., S.E.	Light wind, dull.	Squally, dull.	Strong breeze, rain.
„ 22	25 43	178 28 E.	E.S.E., S.S.E., S.S.E.	Strong breeze, overcast.	Strong breeze, dull.	Moderate breeze.
„ 23, 24	26 10	177 15	S.E., S.S.E., S.S.E.	Strong breeze, overcast.	Strong breeze, clearing.	Same.
„ 25	26 49	174 20	S.S.E., S., S.E.	Strong breeze, fine.	Decreasing breeze, clear.	Light wind.
„ 26	26 54	172 40	Calm, N.W., S.S.W.	Calm, fine weather.	Light airs, fine.	Breeze.
„ 27	26 24	170 10	S.S.W., S.W., S. by W.	Moderate breeze, squally.	Light wind.	Light winds.
„ 28	26 59	169 16	S., N.N.E., N.	Light winds, fine.	Light wind.	Same.
„ 29	28 49	167 31	N.W., W., W.	Strong breeze, squally.	Flying squalls.	Rain and lightning.
„ 30	30 46	168 8	W., W., W.	* Stiff breeze, rain-storms, squalls from W.	Same.	Same.
„ 31	31 13	166 49	W., W., W.S.W.	* Stiff, single-reefed, heavy squalls.	Same.	Same.
AUG. 1	30 35	166 20	S.W.byW., S.W., S.W.	Wind decreasing, squally.	Strong breeze.	Same.
„ 2	31 39	167 2	W.S.W., S.S.W., W.S.W.	Stiff breeze, heavy squalls.	Same.	Same.
„ 3	31 40	166 16	S.W., S.S.W., S.S.W.	Changeable breeze, heavy squalls.	Same.	Light and fine.
„ 4	31 21	171 52	S.W., N.E., E.	Light winds, fine.	Light wind.	Same.
„ 5	32 28	162 39	E., E.S.E., S.E.	Moderate breeze.	Light wind.	Same.
„ 6	33 30	159 49	E.N.E., E.N.E., N.E.	* Light winds, fine.	Moderate breeze.	Same.
„ 7	33 57	156 38	E. by N., E., E.	* Stiff breeze, with heavy squalls.	Same and rain.	Same.
„ 8	34 2	155 34	E.N.E., Calm, S.W.	Light wind and fine.	Calm, & variable wind.	Same.
„ 9	34 5	153 58	S.W., S., S.S.E.	Same.	Same.	Same.
„ 10	34 49	151 31	E., N.W., N.	* Same.	Strong breeze, overcast.	Strong breeze, rain.
„ 11	33 19	152 25	N.N.W., N., W.N.W.	* Strong breeze, rain.	Sighted Port Jackson Light.	Gale of wind and rain.
„ 12	33 24	152 23	W. by N., W., W. by N.	* Gale of wind, clear sky.	Same.	Same.
„ 13	34 9	152 36	W., W., W.S.W.	Gale of wind.	Close-reefed topsails.	Same.
„ 14	Port Jackson.					

* BAROMETER AND THERMOMETER.

JULY 30	29·31		AUGUST 7	29·55	
„ 31	29·45	64°	„ 10	29·50	
AUGUST 6	29·37		„ 11	29·25	

AUGUST 12 ... ... First part, 29·15; Middle part, 29·15; Latter part, 29·26.

III.—MAURITIUS TO MELBOURNE.

165. Captain de Prevoisin kindly furnished me with a copy of a journal kept on a voyage from Mauritius to Melbourne. The barometer and thermometer have been compared in this Observatory, and the corrections applied accordingly. The readings of the former are given in centimetres, and those of the latter in degrees Réaumur.

EXTRAIT DU JOURNAL DE MER DU NAVIRE FRANÇAIS *FREHEL*, TH. DE PREVOISIN, SUR LE PASSAGE DE MAURICE À MELBOURNE.

DATÉE.	LATITUDE À MIDI	LONGITUDE À MIDI. (Meridian de Paris.)	BAROMÈTRE ANEROIDE. (Corrigé.)	DIRECTION DU VENT.			TEMPS ET FORCE DU VENT.
				Première.	Seconde.	Troisième.	
1858.	° ′	° ′	Centimètres.				
MARS 18 ...	Ile Maurice	Ile Maurice	76·6	E.S.E.	...	...	Très grande brise.
„ 19 ...	21 30 S.	54 31 E.	76·8	E S.E.	...	...	Très grande brise.
„ 20 ...	22 50	54 26	76·9	E.S.E.	...	...	Très grande brise.
„ 21 ...	24 36	54 44	77·0	E.S.E.	...	...	Grande brise.
„ 22 ...	26 24	54 40	77·1	E.S.E.	...	...	Grande brise.
„ 23 ...	28 14	54 50	77·0	E.S.E.	...	E.	Brise modérée.
„ 24 ...	30 4	55 55	76·7	E.N.E.	N.	N.N.O.	Petite brise; variable.
„ 25 ...	31 6	57 9	76·4	N.O.	O. au S.O.	S.	Faible brise; variable.
„ 26 ...	31 14	58 24	76·3	S.	...	...	Jolie brise; fine.
„ 27 ...	31 11	58 53	76·6	S.	...	S.S.E.	Grande brise.
„ 28 ...	32 22	58 56	76·7	S.E.	E.S.E.	E.N.E.	Brise modérée ; variable.
„ 29 ...	34 3	59 49	76·6	N.E.	N.E.	N.N.E.	Petite brise; variable.
„ 30 ...	35 27	62 18	76·5	N.N.E.	...	...	Modérée.
„ 31 ...	36 46	65 24	76·2	N.	...	O.S.O.	Jolie brise; très variable.
AVRIL 1 ...	36 55	68 49	76·5	O.	O.S.O.	O.N O.	Faible brise.
„ 2 ...	37 1	70 25	76·4	O.N.O.	N.	O. au S.O.	Presque calme.
„ 3 ...	37 5	73 0	75·9	S.	S.O.	N.O.	Faible brise.
„ 4 ...	36 58	75 52	75·3	N.N.O.	...	O.N.O.	Grande brise.
„ 5 ...	37 20	78 15	75·9	S.O.	S.	S.S.O.	Faible.
„ 6 ...	37 18	80 6	76·2	S.S.O.	...	O.S.O.	Très grande brise.
„ 7 ...	37 19	82 54	76·7	Du O.S O.	au	S.S.O.	Forte brise.
„ 8 ...	36 58	85 40	77·1	Du S.S.O.	au	O.S.O.	Faible.
„ 9 ...	37 1	88 6	77·4	Du S.O.	au	N.O.	Calme.
„ 10 ...	37 23	90 2	76·9	...	O N.O.	...	Petite brise.
„ 11 ...	37 56	93 38	76·4	N.O.	au	O.S.O.	Jolie.
„ 12 ...	38 18	97 17	75·3	O.	...	O.N.O.	Jolie.
„ 13 ...	38 16	100 47	75·4	...	O.N.O.	...	Forte brise.
„ 14 ...	38 26	104 18	75·3	O.	au	N.N.O.	Violente tempête à grain.
„ 15 ...	38 27	107 9	76·2 / 76·7	N.	au	N.N.E.	Faible brise.
„ 16 ...	38 35	110 3	76·9	N.	N.O.	O.	Jolie.
„ 17 ...	38 41	111 38	76·8	O.N.O.	O.	N.N.E.	Calme.
„ 18 ...	38 34	112 25	76·7	...	N.	...	Calme plat.
„ 19 ...	38 43	113 7	76·5	N.N.E.	N.	N.O., O.	Calme plat.
„ 20 ...	38 38	115 27	76·2	O.	au	S.S.O.	Faible brise.
„ 21 ...	38 21	119 0	77·0	S.	S.S.E.	S.E.	Petite.
„ 22 ...	38 55	120 34	77·1	E.	N.	N.O., O., N.	Calme; variable.
„ 23 ...	38 18	121 55	76·6	N.O.	au	S.S.O.	Faible brise.
„ 24 ...	38 26	124 44	75·7	S.O.	S.	E.S.E.	Petite brise.
„ 25 ...	38 16	126 20	75·8	E.	au	S.S.E.	Très grande brise.
„ 26 ...	38 5	126 31	76·3	S.E.	...	E.S.E.	Grande brise.
„ 27 ...	37 51	127 51	76·2	S.E.	S.	S.O.	Brise modérée.
„ 28 ...	37 57	131 22	76·5	S.	au	S.O.	Modérée.
„ 29 ...	38 6	133 28	77·0	S.O.	O.	N.O.	Calme.
„ 30 ...	38 20	134 47	77·1	N.N.O.	S.S.E.	S.O.	Calme.
MAI 1 ...	38 32	136 3	77·4	E.	...	N.E.	Calme.
„ 2 ...	38 54	136 30	77·1	N.N.E.	...	...	Faible brise.
„ 3 ...	39 13	137 40	76·8	E.N.E.	...	N.N E.	Faible le jour; forte la nuit.
„ 4 ...	38 52	138 23	76·6	...	N.N.E.	...	Faible le jour; forte la nuit.
„ 5 ...	38 57	139 16	76·4	N.N.E.	...	...	Faible le jour; forte la nuit.
„ 6 ...	Otway		75·7	N.N.E.	O.	...	À midi tempête ; saute de vents du N.E. à l'Ouest.
„ 7 ...	Bass's Straits		76·3	...	O.N.O.	N.O.	Jolie brise; variable.

166. For a comparison with the preceding voyage I have selected one from Mauritius to Melbourne, made during the months of August and September, by Capt. Pole, who has kindly forwarded the following abstract to the Observatory:—

EXTRACT OF THE LOG OF THE *FORMOSA*, CAPT. POLE, FROM MAURITIUS TO MELBOURNE.

DATE.	Ship's Position at Noon.		Barometer at Noon.	Thermometer.	Wind.						Remarks.
	Lat.	Long.			Noon.	4 p.m.	8 p.m.	Midnight.	4 a.m.	8 a.m.	
1858.	° ′ S.	° ′ E.	Inches.	°							
August 22	36 0	78 0	30·08	...	...	...	...	...	W.S.W. 5 x	W.N.W. 4	Heavy cross swell.
„ 23	36 5	90 12	29·90	...	W.N.W. 4	W.N.W. 4	W.N.W. 4	W.N.W. 4 B	... 3	N.W. 5	Light drizzling rain and cloudy.
„ 24	38 0	93 56	29·90	...	N.W. 5	N.W. 5	N.W. 5	N.W. 5 x	W.N.W. 5	W.N.W. 5	Cloudy; heavy cross sea.
„ 25	38 0	97 33	29·97	...	W.N.W. 4–5	...	S.W. 4	W.N.W. 4	W. by N. 4 *a*	S.W. 5 x B	Cloudy; clear; hazy and rain.
„ 26	38 2	101 8	29·80	...	W.S.W. 4 x B	W.S.W. 4 x *b*	W.S.W. 4 x *b*	W.S.W. 5 x x	W.S.W. 5 x x	W.S.W. 4 x x	High cross sea.
„ 27	39 4	104 32	29·88	...	W.S.W. 4 x x	W.S.W. 4 x x	W.S.W. 4 x x	W.S.W. 5 x x	W.S.W. 4 x	W.S.W. 4	
„ 28	39 0	107 28	30·02	...	W.S.W. 4	W.S.W. 4	W. 4 *a*	W. 4–5	W.N.W. 4–5	W.N.W. 4	
„ 29	39 1	111 4	30·23	...	N.N.W. 4	W.N.W.	W. 3 *b*	W. by N. 3 *b*	W. by N. 4	W. by N. 4	Fine; rainy; cloudy.
„ 30	39 1	114 33	30·20	...	W. by N. 4	W.N.W. 4	W.N.W. 4	W.S.W. 4	W.S.W. 4	W.S.W. 4	Cloudy.
„ 31	39 2	118 36	30·20	...	W.S.W. 4	W.S.W. 4	W. 4	W.N.W. 4	N.W. 4	W.N.W. 4	Cloudy; rainy; clondy.
Sept. 1	39 0	122 30	29·80 / 29·72	...	N.N.W. 4–5	N.N.W. 4–5	W. 5 *b*	W. 5 x x	W.S.W. 5 x x	W.S.W. 5 x x	Ends with stiff squalls with a high sea running.
„ 2	38 5	124 45	29·82	...	W.S.W. 5 x x	S.W. 4	S.S.W. 3	S.W. 3	W. 3	N.W. 3	Cloudy.
„ 3	39 1	128 46	30·22 / 30·20	...	N.W. 3	N.W. 3	N.N.W. 3–4	N. 4–5	N. 5	N. 5 x x	Puffy; ends squally.
„ 4	39 2	131 18	30·14	...	N. 5 x	N. 4	N. 5	N. 5	N. 5	N. 5 x x x *B*	Cloudy; fall of barometer in 14 hours 0·59, ditto sympiesometer ditto 0·65, in the first half of the day; squally and hove to.
„ 5	39 2	133 56	29·55 / 29·80	55	N.W. 5 x x B	S.W.	S.W.	S.W. 5 x x	S.W. 4 x	S.S.W. 4 x	Symp. 29·90; wind veering rapidly to S.W.
„ 6	38 5	135 54	29·93 / 30·30	55	S.S.W. 4 x	S.S.W. 5 x x	S.S.W. x x	S.S.W. 4	S.S.W. 5 x x	S.	Symp. 29·90; cloudy, hard squalls; hove to the better part of the day.
„ 7	39 27	138 28	30·14 / 30·20	55½	S.S.W. 5	S.S.W. 5	S.S.W. 4	S. by W. 4	S. by W. 4	S.W. 4	Symp. 30·10; cloudy; S.E. swell.
„ 8	39 35	140 34	30·10	...	S.W. 4	S.W. 3	S.W. 3	S.W. 4	W. 4	N.W. 4	Cloudy.
„ 9	39 2	142 27	29·82	...	N.W. 4	N.W. 4 x x	N.N.W. x x B	N.N.W. 5	N.N.W. 4	N.N.W. 4	Cloudy; squally; ends fine.
„ 10	Made Cape Otway		29·95	...	N.N.W. 3–4	to 3	W.S.W. 3	N. 2–3	N.E. 4	... 4–5	Fine and clear.
„ 11	...	...	...	...		Easterly		W. 4	W. 4–5	W. 4 B	Moderate clear; cloudy and thick.

N.B.—The figures below each wind direction denote the strength of wind, the scale from calms to hurricane being divided into seven divisions; x denotes squally; x x strong squalls; x x x very hard squalls; B denotes rain; and *b* fine drizzling rain; *B* strong rain; *a* denotes hazy weather; and this applies to the other voyages given unless expressly mentioned.

IV.—HURRICANES IN THE INDIAN OCEAN.

167. The two following extracts, from the log of the ship *Marion* and from a letter of Captain Stoertenbecker, are very illustrative of the character of Hurricanes in the Indian Ocean, and may well find a place here. With reference to the first I may state that the observations made at this Observatory on the same days gain much interest when compared with this report:—

EXTRACT FROM THE LOG OF THE SHIP *MARION*, CAPT. FLEMMING, ON HER PASSAGE FROM MELBOURNE TOWARDS COLOMBO, CEYLON.

December 4th, 1858.—Latitude at noon, 12° 23′ S.; Longitude, 83° 46′ E. At 4 p.m., wind N.E., squally; the wind very variable, and inclining towards E.

December 5th, 1858.—Wind S.E.; much rain at midnight. Afterwards the wind rapidly increasing, with a very threatening appearance, and the barometer falling from 30·00 in. to 29·20 in. (very unreliable observation); temperature 83°. Wind frequently shifting, S. to S.W. to N.N.W. to N.E. At 1 a.m. (5 o'clock a.m. Melbourne mean time).—Latitude, 11° 5′ S.; Longitude, 83° 55′ E. The wind veering to S.W. in violent gusts. Called all hands to furl the sails, but before this could be done a terrific hurricane commenced to rage, with thunder and lightning. Topsails carried away, and blowing all other sails out of the gaskets and perfectly clear away from the yards and masts. The lightning struck the maintop-gallant mast, and, running down the wire on the mainroyal stay, carried away both top-gallant masts close by the cap. The ship was now thrown on her beam ends. Two a.m.—The hurricane at its height (Melbourne mean time 6 a.m.), blowing more steadily in its force—the atmosphere being very dense, so much so that the man at the wheel could not discern the compass at the ordinary distances. Three a.m.—It began to clear again in N.E., but the wind remained unabated. The hands standing by to cut away the masts. Four a.m.—Moderating; the hurricane travelling W.S.W. Five a.m.—Steady gale. Six a.m.—Passed several portions of broken masts belonging to a ship.

At noon of the 4th, Latitude 11° 0′ S.; Longitude 83° 39′ E.; Barometer 29·90 in.; Thermometer 83°.

Currents setting S.W.

[*Simultaneous with the above.*]

EXTRACT OF THE SHIP *HENRIETTA HELENA*, ON THE 4TH AND 5TH DECEMBER.

Latitude 32° 33′ S.; Longitude 29° 43′ W.; regular S.E. trades; Barometer 29·83 in., falling, namely:—December 4th, 29·85 in. at noon; 5th, 29·83 in.; 6th, 29·68 in.; 7th, 29·75 in.; 8th, 29·77 in.; 9th, 29·60 in.; 10th, 29·53 in.—Latitude 36° 43′ S.; Longitude, 15° 38′ W.

EXTRACT FROM A LETTER OF CAPT. STOERTENBECKER (*CESAR GODEFFROY*), FROM BATAVIA, ON A PASSAGE ROUND THE LEEUWIN TO JAVA.

Batavia, 6th July, 1857.

According to promise I have the pleasure to acquaint you of our safe arrival here, after a very disagreeable passage. It is a tedious voyage to pass Cape Leeuwin in this season, as we had continued W.N.W., W., and N.N.W. winds, almost without exception, and only enjoyed W.S.W. and S.W. breezes of very short duration, when in 19° S. latitude, which veered in two days to E. and E.N.E. On the 23rd we made the coast of Java, and arrived in the roadstead here on the 27th. The compass oscillated very considerably in that part of the Indian Ocean, where the variation is 0, and particularly during a high sea, taking four points towards each side. Until Cape Leeuwin we had no great storms. The heaviest weather we experienced from 36° to 30° S. latitude—terrific squalls, with the wind N. and N.N.W., and heavy thunder and lightning. The air appeared sultry, and the weather turned to hurricane-like squalls, with thunder and lightning, when we were obliged to furl the close-reefed foretopsail. This, however, lasted only about one hour and a half, when rain began to fall in torrents, and the wind veered to W. and W.S.W., with squalls. After about twenty hours the wind returned again to N.W., and it remained fine weather till the 20th, when squalls set in again from S.W. According to your instruction, the abstract log is kept with the best of success.

168. I subjoin here a table showing the directions of wind and the pressure of air during a hurricane that occurred on the 1st and 2nd of March, 1859, in the Indian Ocean, and of which accounts have reached through the logs of two ships, *Johannes* and *Magdalena*. The log of the ship *Richard* also illustrates the nature of this phenomenon; and some extracts have been given here, together with the hourly observations on pressure of air and direction of wind, as made in this Observatory during the occurrence.

HURRICANE IN THE INDIAN OCEAN ON THE 1ST AND 2ND OF MARCH, 1859.

1859.		Flagstaff Observatory.		Ship *Johannes*, Captain Bruhn.* (40°59′ S., 49°16′ E.)				Ship *Magdalena*.† (23°83′ S, 43°41′ E.)			Ship *Richard*. (60°12′ E., 38°18′ S.)	
Date.	Hour.	Reduced Barometer.	Wind.	Wind.	Force.	Barometer.	Weather.	Wind.	Force.	Weather.	Wind.	Weather.
Feb. 28 (Nautical time.)	Noon to 4 p.m.	...	...	W. by N.	5	29·55	...	S.	2	...	...	...
,,	4 to 8 p.m.	...	...	W. by N.	4	29·57	...	S.	2	...	...	...
,,	8 to Mid.	...	...	W. by N.	5	29·60	Bar. at Midnt.	Calm	...	...	...	...
March 1 (Civil time.)	Mid. to 4	12h., 29·891 1h., 29·924 2h., 29·862 3h., 29·840	N.E. N.E. N.E. by N. N.E. by N.	W.N.W.	5	...	Light fleecy clouds	Almost calm	...	...	...	...
,,	4 to 8	4h., 29·927 5h., 29·833 6h., 29·828 7h., 29·829	N.E. ½ N. N.E. ½ N. N.E. by N. N.E. by N.	W.N.W.	5	29·60	Fine	S.W.	...	Almost calm	...	...
,,	8 to Noon	8h., 29·808 9h., 29·812 10h., 29·814 11h., 29·751	N.E. by N. N.N.E. N. N.	W.N.W.	4	...	...	W.S.W.	...	Strong breeze	...	...
March 1 (Nautical time.)	Noon to 3	12h., 29 798 1h., 29·801 2h., 29·760	N. N. N.E. by N.	W N.W.	1	...	...	S.W.	...	Hard gale	W.S.W.	
,,	3 to 4	3h., 29·731	N. ½ W.	E.N.E.	2	29·60	...	...	...	...	...	
,,	4 to 8	4h., 29·763 5h., 29·815 6h., 29·841 7h., 29·875	S. ½ E. S. S. S.	N.E.	4	29·50	Fine rain, zen. clear	S.W.	...	Hard gale	S.W. by S.	Strength of wind very variable.
,,	8 to Mid.	8h., 29·896 9h., 29·903 10h., 29·922 11h., 29·921	S. S E. S. by E. S.	N.E., & N. by E.	5	29·56	...	S.W.	...	Hard gale	S.W. by S.	
March 2 (Civil time.)	Mid. to 4	12h., 29·914 1h., 29·902 2h., 29·886 3h., 29·880	S. S. S. S.S.W.	N. by E.	2	...	...	W.S.W.	...	Hard gale	S.W. by S.	
,,	4 to 8	4h , 29·883 5h., 29·890 6h., 29·908 7h., 29·906	S. S. S.E. S.E.	N. by E.	...	...	...	W.S.W.	...	Hard gale	S.S.W.	...
,,	8 to 12	8h., 29·911 9h., 29·916 10h., 29·909 11h., 29·903	S.E. by S. S. by W. S.W. ½ S. S.W.	N.N.E. to N.	...	29·04	...	W.N.W.	...	Hard gale	E. by S.	...
March 2 (Nautical time.)	Noon to 4	12h., 29·888 1h., 29·874 2h., 29·852 3h., 29·832	S. by W. ½ W. S. S. ½ W. S. by W.	W.N.W.	...	29·38	Hard gale	N.W.	...	Lessening with fresh squalls	N.N.E.	...
,,	4 to 8	4h., 29·832 5h., 29 829 6h., 29·832 7h , 29·838	S. S. S. by W. S.E.	W. by N.	...	29·50	...	...	...	...	N.	...
,,	8 to Mid.	8h., 29·853 9h., 29·853 10h., 29·852 11h., 29·844 12h., 29·832	S.E. E.S.E. E. by S. E.S.E. ..	W. by N.	...	29·67	Lessening	...	...	...	N.	...
,,	Mid. to 4	...	...	...	...	...	...	...	...	...	N.	...
,,	4 to 8	...	...	...	...	...	...	...	...	...	N.	...
,,	8 to Noon	...	...	...	...	...	...	...	...	...	N.	...

* Course steered March 1st, S.E. ½ E.; course steered March 2nd, N.E. by N.; course made March 2nd, E. † Course, S.E. ½ E.

EXTRACTS FROM THE LOG OF THE SHIP *JOHANNES*, CAPTAIN BRUHN.

Sunday, 27th February.—Noon, partially covered sky, fresh breeze from W. by N.; course E.S.E. per compass, about 8 knots run. 4 p.m., latitude per observation, 41° 12′ S.: longitude per chronometer, 44° 40′ E.; barometer, 29·55 in.; variation, 27° W., per azimuth, at sunset; wind fresh, few clouds but of very dark color; beautiful sunset; a few dark clouds looking like precursors of rain. Midnight, same wind and weather. After midnight, covered sky, but soon clearing away again; light fleecy clouds passing rapidly. Forenoon, wind lessening, covered sky. Noon, latitude by observation, 40° 59′; longitude per chronometer, 48° 38′.

Monday, 28th February.—Afternoon, light winds from W.N.W. and calm. At 3 p.m. light airs from E.N.E., covered sky; made three knots S.E. run. At sundown, increasing wind. At 8 p.m. took in all light sail and took in a double reef in foretop; course from 8 p m. to 12 midnight, S.E. by S. Wind increasing and shifting northwards, the air being thick with fine misty rain. After midnight a few stars became visible near the zenith; clouds passing rapidly; the ship run circa 10 knots between 8 p.m. and 8 a.m., course S.E. by E. At sunrise it blew a perfect hurricane from N. and N. by E.; the sun cast a fiery red light over the sea which rose very high and was covered with white foam as far as the eye could reach. From 4 a.m. until 8, contrived with very great pains to take in successively all sail, and put the ship under close-reefed foretopsail. At 8 a.m. were obliged to take in the foretopsail, and to bring the ship to under the lee sheet of the maintopsail only. From 8 a.m. till 10 a.m. the rain poured down in torrents, accompanied by very hard squalls. Towards noon the wind shifted to N.W., with passing showers.

Tuesday, 2nd March.—Afternoon, hard gale, N.W. to W. by N.; barometer rising. At sunset, decreasing gale. At 11 p.m. weather became more moderate, set the necessary sails and steered E. per compass, and made 7 to 8 knots under double reefed topsail.

V.—COAST OF AUSTRALIA.

169. The logs copied here have been supplied by Captain Gilfillan, who undertook to keep a meteorological register whilst trading on this coast. The figures given in the columns headed "Barometer" and "Thermometer," represent the means of six observations—taken at noon, 4h. p.m., 8h. p.m., midnight, 4h. a.m., and 8h. a.m.

Apart from the general interest that must be attached to these carefully made observations of the wind and weather on this coast, they will be found highly valuable when compared with the corresponding observations made at this Observatory; and it certainly confers great credit on Captain Gilfillan that he has so earnestly given his support to meteorological investigations.

170. VOYAGE OF SCHOONER *YARRA*, CAPT. GILFILLAN, FROM MELBOURNE TO ADELAIDE.

DATE.	SHIP'S POSITION AT NOON.	MEAN READING OF		WIND.						REMARKS.
		Barometer.	Att. Ther.	Noon.	4 p.m.	8 p.m.	Midnight.	4 a.m.	8 a.m.	
1858.										
SEPT. 7	Hobson's Bay	29·780	58·5	W.S.W.	S.W.	W. by S.	...	W. by N. (6 a.m.)	...	First part, wind veered to S., then steady with showers; second part, squally with showers; third part, moderate and cloudy.
„ 8	Port Phillip Heads	29·757	58·0	W. by N.	W.N.W.	W.N.W.	N.W.	N.W.	W.	First part, wind moderate; then steady breeze a little squally and cloudy. Second part, breeze increasing; third part, strong gale with rain, wind veering to the S.
„ 9	Lat. 39° 18′, Cape Ottway bearing N.	29·905	58·2	W.S.W.	W.S.W.	W.S.W.	Variable	N.N.E.	N.	First part, strong breeze, sky clear, then moderate; heavy swell. Second part, less wind and clear, then light airs round by S. to N. and cloudy. Third part, smart and then strong breeze and clear.
„ 10	Lat. 39°	29·742	59·8	N.	N.	W. by S.	S.W.	S.W.	S.W. by S.	First part clear and fine, horizon hazy; second part, wind shifted suddenly to S.W.; saw a bright meteor. Third part, squally with rain, then fair and clear; wind very strong.
„ 11	Off Cape Bridgewater 20 miles S.	29·888	54·7	S.W.	S.W.	S.W.	S.S.W.	S.S.W.	S.S.W.	First part, strong gales with heavy squalls; second part, same, and heavy sea; third part, wind shifted suddenly to S., then more moderate and cloudy; ended moderate and clear.
„ 12	Cape Northumberland N. by W. ½ W. 12 miles	29·990	57·3	S.W.	S.W.	S.S.W.	Variable	E.N.E.	N.N.E.	First part, fine weather, moderate breeze; then cloudy. Second part, light airs and calm, cloudy; third part, light airs, fine and clear; Cape Northumberland N.E. 15 miles.
„ 13	...	*29·333	57·6	N. by E.	N.E.	N.E.	N. to NW.	W.N.W.	W.N.W.	First part, strong breeze, rain, hazy, stormy looking, dark and gloomy; second part, very heavy gale, rain squalls; lightning in S.W., wind hauling westward. Third part continued heavy gale, lightning in E.; clear.
„ 14	Cape Northumberland E. 50 miles.	29·325	57·0	W.N.W.	W.N.W.	W. by N.	W. by N.	W.	W. by S.	First part, gale continues; second part, gale continues with hard squalls; third part, gale continues with heavy squalls, hauling to the south.
„ 15	Lat. 38° 32′, Long. 139° 38′	29·738	55·2	W. by S.	W. by S.	W. by S.	W. by S.	W. by S.	W. by S.	First part, gale continues with heavy hail squalls; second part, abating, but accompanied with hard squalls of hail; third part, gale abating, squalls not so hard, rain showers and clear sky; ends moderate and clear with passing showers.
„ 16	Lat. 37° 24′ Cape Banks E. by N. 30 miles	30·137	58·5	W. by S.	W.	W.	W.	W.	N.W.	First part, moderate, fine and clear; then passing showers and cloudy. Second part, fine with passing showers; wind light. Third part, wind light and baffling inclined to N.; cloudy and showery and then fine and clear.
„ 17	Lat. 36° 30′ off Kangaroo Island	30·085	59·2	N.	N.N.E.	N.E.	N.E. by E.	N.	N.N.W.	First part, fine clear weather, light wind; second part, moderate, fine and clear; third part, cloudy and squally, very strong breeze hauling to westward.
„ 18	Cape Jervis N.E.	30·00	67·2	N.	Variable	Calm	Calm	Calm	Calm	First part, heavy squalls but clear, and then light airs; second and third parts, calm with broken clouds.
„ 19	Off Cape Jervis	29·94	67·6	N.W.	S.W.	S.W.	Calm	...	...	First part, fine weather, light wind and warm; Cir. Cu. Second part, in St. Vincent's Gulf, moderate breeze and fine weather; then clear and calm.

* Barometer maximum, 29·66; minimum, 29·16 at midnight September 12, to 4 a.m. September 13.

GENERAL REMARKS.

It will be seen that we have had some heavy weather during the passage. The first breeze was when off Cape Otway, which lasted up to midnight of the 9th, when the wind shifted from northward to S. by the west and taking its regular course, after falling light, round the east to the north, being lightest at east. It continued to haul round to S.W. again and fell calm and was lightest when E.N.E., continuing to follow round to west by the north, and blew hardest when between W.N.W. and S.W., from which quarter we experienced some very heavy hail squalls. It continued some time at S.W., then hauled back by the west to north, after which it fell light, and came to N.E. There the breeze increased and hauled round to N.W. by the north and blew hard. It then gradually became calm, again sprung up from N.W. light, fell then calm and in the calm shifted to S.W. light, when we arrived in Adelaide.

171. VOYAGE OF SCHOONER *YARRA* FROM ADELAIDE TO MELBOURNE.

DATE.	Ship's Position at Noon.	Mean Reading of		Wind.						Remarks.
		Barometer.	Ther.	Noon.	4 p.m.	8 p.m.	Midnight.	4 a.m.	8 a.m.	
1858.										
Oct. 1	Gulf of St. Vincent.	30·303	58·5	S.S.E.	Variable	S.E. by S.	S.	E.S.E.	S.E.	First part, fine weather, clear, then light airs and calms; second part, moderate breeze and fine; third part, moderate breeze and fine weather, (in Backstairs Passage).
„ 2	Backstairs Passage.	30·288	58·0	E.S.E.	E.S.E.	E.S.E.	E.S.E.	E.	E. by N.	First part, moderate breeze and fine; second part, ditto, and steady breeze; outside Kangaroo Island, and fine and clear; third part, ditto, ditto.
„ 3	Lat. 36° 25′, Long. 138° 41′	30·293	63·0	N.E.	Calm	Calm	E. by S.	E.	E. by N.	First part, light breeze, hazy, but fine, then calm and warm; second part, very light airs and calm and fine, heavy dew; third part, light breeze and fine.
„ 4	Lat. 37° 23′, Long. 138° 45′	30·218	63·7	E.N.E.	E.N.E.	E. by N.	E.N.E.	N.E.	N.N.E.	First part, moderate breeze, then light airs and baffling; second part, light breeze and fine; heavy dew, then moderate; third part, breeze freshening and fresh breeze.
„ 5	Lat. 38° 23′, Long. 139° 43′	30·070	65·5	N. by E.	E.N.E.	Calm	Calm	E.N.E.	N.N.E.	First part, light breeze and fine, then light and variable, and fine; second part, perfectly calm and fine; third part, light airs and fine clear weather.
„ 6	Lat. 38° 51′, Long. 140° 44′	30·217	63·7	E.N.E.	E.N.E.	E.N.E.	E.N.E.	N.E.	N.E. by N.	First part, light breeze and fine; second part, moderate breeze and fine, then increasing; third part, fresh breeze and fine, head sea.
„ 7	...	29·895	61·8	N.N.E.	N.E.	N.E.	N.E.	N.E.	N. by W.	First part, fresh breeze and hazy, damp and drizzling rain; second part, fresh breeze, threatening rain and cloudy; third part, fresh breeze and cloudy, heavy head sea.
„ 8	Lat. 39° 27′, Long. 143° 13′	29·895	64·0	N.W.	N.W. by W.	W.	W.	...	...	First part, strong gale and squally, afterwards steady; second part, light breeze and cloudy, then fresh and cloudy.

GENERAL REMARKS.

During this passage we have had very fine weather and light winds principally between North and East, veering and hauling two or three points either way. We have generally had fine clear weather with heavy dews at night, but no rain. The wind at the latter part of the passage hauled round to the westward, when it became squally, cloudy, and threatened rain, and the barometer fell below 30 inches.

172. VOYAGE OF SCHOONER *YARRA* FROM MELBOURNE TO ADELAIDE.

DATE.	Ship's Position at Noon.	Mean Reading of		Wind.						Remarks.
		Barometer.	Ther.	Noon.	4 p.m.	8 p.m.	Midnight.	4 a.m.	8 a.m.	
1858.										
Oct. 15	Port Philip Heads at 4 p.m.	29·616	67·0	...	N.N.E.	N.N.E.	N. by E.	W.N.W.	N.W. by W.	First part, fine weather, cloudy, some large drops of rain, breeze moderate; second part, Cape Otway light S.W. by W. 10 miles; remarkable difference of temperature, hot and cold alternating, the weather threatening to the west with heavy black clouds and low haze in the east; third part, cloudy, squally, threatening, hot and cold puffs of wind, heavy swell from S.W.
„ 16	Lat. 39° 20′ S. off Cape Otway, 55 miles	29·577	60·3	W.N.W.	W. by N.	W.	W.	W.	W.	First part, strong breeze, cloudy and rain, heavy sea; second part, strong gale, cloudy; third part, gale continues with rain squalls and lessens a little at the end.
„ 17	Moonlight Head N. by E. 15 miles	29·795	60·0	W.	W.	W.	N.W.	N.W.	N.	First part, steady strong breeze, rain squalls; numerous white fleecy clouds with clear patches between; second part, steady breeze, cloudy, breeze increasing, wind inclining to haul back to northward, sky overcast and hazy; third part, strong gale and damp haze, heavy sea, wind still inclined to the N.
„ 18	Lat. 39° 59′, Long. 141° 11′	29·330 *	57·3	N.	N.N.W.	W. †	W.	W.	W. by N.	First part, strong gale, sky overcast, hazy, sky more clear at the end; second part, heavy gale shifts suddenly from N. to W., with small rain and cloudy, and hard squalls with hail; third part, heavy gale and hard squalls and very cold, gale lulls a little at times.
„ 19	Lat. 39° 37′, Long. 142° 19′	29·558	54·8	W.	W.S.W.	S.W.	S.W.	S.S.W.	S.S.W.	First part, heavy gale with hail squalls, clouds broken; at the latter part wind dying away, and some showers of rain and hail together; second part, wind freshening again and hauling more S, very black stormy looking with rain, wind very heavy, lightning to the W.; third part, strong breeze and steady, sky clearing.
„ 20	Cape Northumberland N.N.W.	30·183	56·0	S.W. by S.	S.W. by S.	S.W. by S.	S.W. by S.	W.S.W.	W.N.W.	First part, strong breeze then unsteady and light, fine, clear, with passing light squalls and showers; second part, moderate, about 10 miles off shore; third part, very light wind, fleecy clouds and rain, fine weather.
„ 21	Lat. 37° 12′, Long. 139°	30·355	59·1	W.S.W.	S.S.E.	S.S.E.	E.	E.N.E.	N.E.	First part, pleasant weather, clear, a little cold; second part, fine pleasant weather, wind hauling to the N.E. round by east; third part, fine pleasant weather, smooth water and clear sky.
„ 22	Between Cape Jervis and Cape Willoughby	30·380 30·32 at 4 p.m.	70·0 64·0	S.E.	S.W.	...	...	...	...	First part, very fine weather.

* Barometer, minimum of, 29·27 from 4 p.m. to 8 p.m. on the 18th. † Sudden shift of a heavy gale from N. to W.

173. VOYAGE OF SCHOONER *YARRA* FROM ADELAIDE TO GEELONG.

DATE.	SHIP'S POSITION AT NOON.	MEAN READING OF		WIND.						REMARKS.
		Barometer.	Ther.	Noon.	4 p.m.	8 p.m.	Midnight.	4 a.m.	8 a.m.	
1858.										
Nov. 1	30 miles S. of Kangaroo Island.	29·743	64·8	N.N.W.	N.W.	S.W. by S.	S.W. by S.	S.S.W.	S.S.W.	First part, cloudy and squally, unsteady hot wind ends with rain, wind hauling southward; second part, strong breeze, cloudy and stormy looking clouds very low, very strong breeze; third part, strong breeze, damp cloudy weather, wind veering to the S. and eastward.
„ 2	Cape Jervis	30·095	60·5	S.S.E.	S.S.E.	S.E.	S.E.	S.E.	S.E.	First part, strong breeze, clear sky, heavy sea; second part, less wind, at times cloudy, then light wind, heavy bank to S.E.; third part, light wind inclining to eastward, clear.
„ 3	Lat. 37° 14′ Long. 138° 26′	30·157	62·0	Calm	S.E. by E.	E.S.E.	E.N.E.	N.E.	N.N.E.	First part, no wind, fine, clear, pleasant, then moderate and fine; second part, moderate and fine; third part, steady, fine and pleasant.
„ 4	Lat. 38° 51′ Long. 139° 54′	30·000	65·0	N. by W.	W.	W.	S.W.	S.S.W.	S.S.W.	First part, fine, steady, pleasant weather; second part, very light breeze, sky overcast, swell from S.W; third part, light airs from southward, hazy, heavy dew, cloudy, swell from S.W.
„ 5	(Sun obscure)	30·055	62 7	S.S.W. to S.S.E.	S. by E.	S.E.	E.N.E.	E.N.E.	E.N.E.	First part, very light airs, dark and gloomy, then light breeze inclining to the eastward. Second part, moderate breeze, hazy weather, heavy dew, and then breeze increasing; dark haze, with heavy drops of rain. Third part, moderate breeze, with heavy rain; dark and cloudy.
„ 6	Lat. 39° 91′ Long. 142° 0′	29·733	62·0	N.	N.E.	N.E.	E.	E.	E.	First part, moderate, cloudy, rainy, strong current from S.W. Second part, strong breeze, with heavy flash lightning from N. to S. by E.; strong breeze from S.W., with dark cloudy weather. Third part, very strong breeze from S.W., stormy-looking weather, strong gale off Cape Otway, and squally, with small rain.

GENERAL REMARKS.

At noon, very strong breeze from S.W., with stormy-looking weather, and small rain in smart squalls, and heavy sea running along the land. Made the heads at 4 p.m., passed up through the west channel, and came to an anchor off Point Richards at 10 p.m., the wind having died away gradually till nearly calm.

174. VOYAGE OF SCHOONER *YARRA* FROM GEELONG TO ADELAIDE.

DATE.	SHIP'S POSITION AT NOON.	MEAN READING OF		WIND.						REMARKS.
		Barometer.	Ther.	Noon.	4 p.m.	8 p.m.	Midnight.	4 a.m.	8 a.m.	
1858.										
Nov. 17 (Midnight)	Off the Heads	29.360	62·3	...	...	...	N.E.	S.S.W.	W.	Second part, wind variable; stormy looking, with a great deal of chain and sheet lightning, and heavy black clouds. Third part, better looking, sun out, but thick and hazy on the horizon, wind veering.
„ 17 (Noon)	Lat. 38° 35′ Between Cape Otway and King's Island	29·675	62·7	S.S.W.	W.S.W.	S.W. by S.	S.W.	W.N.W.	W.N.W.	First part, fresh breeze and cloudy and hazy, wind veering to S.; latter end, strong gale and windy looking sky, wind unsteady. Second part, a little less wind, sky clearing; ends with moderate breeze, with small rain. Third part, moderate breeze, with broken cloudy sky; ends with fresh breeze, sky overcast, with damp hazy weather.
„ 18	Between Cape Otway and King's Island	29·812	65·3	W.	W.S.W.	W.S.W.	W.	W.	W.	First part, strong breeze, heavy sea, broken cloudy sky, air damp. Second part, strong breeze, clouds clearing away, fine clear blue sky; then cloudy but fine weather, and rather less wind. Third part, smart breeze, damp hazy weather, heavy head sea; ends with moderate breeze and cloudy, barometer rising very slowly.
„ 19	Cape Otway N.N.E. 10 miles	29·882	64·7	W.	W.N.W.	W.N.W.	W.N.W.	W.N.W.	W.N.W	First part, moderate breeze and pleasant weather, then less wind, warm, and sky clear. Second part, light breeze, with hazy sky, heavy dew; then breeze increasing. Third part, smart breeze and hazy; ends with strong breeze and hazy.
„ 20	Lat. 39° 37′ Long. 142° 31′	29·915	63·2	W.N.W.	W.N.W.	W.N.W.	W.N.W.	W.N.W.	Calm	First part, strong gale, damp hazy weather, cirro strati parallel N.W. to S.E.; ends with strong gale and damp fog. Second part, first strong gale and damp, then more moderate. Third part, light breeze, ends with calm.

174. VOYAGE OF SCHOONER *YARRA* FROM GEELONG TO ADELAIDE—*continued.*

DATE.	SHIP'S POSITION AT NOON.	MEAN READING OF		WIND.						REMARKS.
		Barometer.	Ther.	Noon.	4 p.m.	8 p.m.	Midnight.	4 a.m.	8 a.m.	
1858.										
Nov. 21	Lat. 40° 23′ Long. 141° 0′	29·850	66·3	E.N.E.	E.N.E.	N.E.	N. by W.	N.N.W.	N.N.W.	First part, nearly calm, clear sky, clouds rising from eastward; ends with smart breeze and pleasant weather. Second part, smart breeze, with damp, and haze on horizon; ends with heavy dew, bright clear sky, rather cold. Third part, strong breeze hauling to N.W., with cloudy sky; wind unsteady, veering and hauling from W. to N.
„ 22	Lat. 38° 51′ Long. 139° 46′	29·855	65·7	N.N.W.	W.N.W.	S.W. and E.N.E.	Light winds and variable	Light winds and variable	S.	First part, moderate breeze and hazy weather, wind veering and hauling, and dark, cloudy; wind unsteady, hauls round from S.W. to N.E. by the south. Second part, wind flying about from N.E. to S.W., nearly calm. Third part, dull, damp, sky overcast, wind light and unsteady; ends rainy, clouds very low.
„ 23	*(Sun obscure)	29·937	63·8	Variable	S.S.W.	S.	S.S.W.	S.S.W.	S.S.W.	First part, dark, damp, rainy weather; wind suddenly shifts from N.E. to S.W. by the north. Second part, smart steady breeze, but cloudy and dark. Third part, steady breeze and cloudy, made Cape Willoughby light at 4 a.m., with fine steady weather and pleasant; were at Backstairs Passage at 8 a.m., with fine weather and light breeze.

175. VOYAGE OF SCHOONER *YARRA* FROM ENCOUNTER BAY TO MELBOURNE.

DATE.	SHIP'S POSITION AT NOON.	MEAN READING OF		WIND.						REMARKS.
		Barometer.	Ther.	Noon.	4 p.m.	8 p.m.	Midnight.	4 a.m.	8 a.m.	
1858.										
Dec. 18	40 miles S.W. off Pt. Elliott at 8 p.m.	29·227 *	62·0	...	...	W.	N.	N.E. to S.S.W. round by E.	S.S.W.	Second part, moderate and hazy, with thick drizzly rain; ends with heavy rain and dark clouds. Third part, heavy rain, and blows hard in squalls; hard squalls with heavy sea, small rain, sky clear.
„ 19	Lat. 36° 12′ Long. 137°	29·643	59·7	S.S.W.	S.W.	S.S.W.	S.S.W.	S.S.W.	S.S.W.	First part, less wind, at times showery and squally, sky broken and cloudy, but gale continues. Second part, a little less wind, heavy sea, cloudy and squally; ends with strong steady breeze, heavy sea and immense heavy clouds. Third part, steady strong breeze, wind decreasing between squalls, with rain; cloudy.
„ 20	Lat. 36° 25′ Long. 139°	29·860	62·7	S.S.W.	S.W.	W.S.W.	W.S.W.	W. by S.	W.S.W.	First part, less wind, sky clear, heavy swell, ends with more wind again and more westerly; slight rain squalls. Second part, fresh breeze and cloudy, high sea, wind inclining to W. Third part, fresh gale, increasing, squally-looking.
„ 21	Lat. 38° Long. 139°	29·873	64·3	W.S.W.	W.S.W.	S.W. by S.	S.W. by S.	W.	W.	First part, fresh gale, small rain, heavy clouds to west. Second part, moderate breeze, inclining to southward; cloudy; wind dying away at the end. Third part, light breeze and cloudy, with small rain.
„ 22	Lat. 38° 3′ Long. 140° 24′	29·858	64·7	Light airs W.	Calm	Calm	S.S.E.	S.E. by S.	S.E. by S.	First part, light airs and calm, clear, clouds rising to W. Second part, calm, fine; ends moderate breeze, fine. Third part, moderate breeze freshing, fine, pleasant, clear.
„ 23	Abreast Cape Bridgewater, 5 miles off	29·882	64·3	S.E.	S.E.	E.S.E.	E.S.E.	E.S.E.	E.S.E.	First part, fine, smart steady breeze, and clear. Second part, strong breeze and damp atmosphere. Third part, strong breeze, heavy dew, detached fleecy clouds.
„ 24	Lat. 38° Long. 142°	29·808	67·0	E.S.E.	E.S.E.	E.S.E.	E.S.E.	E.S.E.	E.S.E.	First part, strong breeze, steady; cirro strati, direction from east. Second part, strong breeze, ending in gale; damp hazy weather, sky overcast. Third part, less wind, damp, hazy, smoother water.
„ 25	Lat. 38° 38′ Long. 141°	29·607	69·3	E.	E.	E. by S.	E.	E.N.E.	N.N.E.	First part, breeze dying away, fine weather, and then freshing again, and sky moderately cloudy. Second part, wind steady and strong, damp atmosphere. Third part, thick fog, with less wind; wind hauling to the north.
„ 26	Lat. 38° 58′ Long. 142°	29·498	69·5	N.N.E.	N.N.E.	W. to W.N.W.	W.	W.	W.	First part, nearly calm; cirro str. in direction from S.W., and cloudy to southward. Second part, sudden change and heavy rain, thunder and lightning, hard squalls and heavy rain, dark stormy weather. Third part, strong breeze, with rain and squally, then steady and fine weather, but cloudy. Port Phillip in sight.

* Barometer, minimum at midnight, December 18th, 29·130; thermometer, 63°.

176. VOYAGE OF SCHOONER *YARRA* FROM MELBOURNE TO ADELAIDE.

DATE.	SHIP'S POSITION AT NOON.	MEAN READING OF		WIND.						REMARKS.
		Barometer.	Ther.	Noon.	4 p.m.	8 p.m.	Midnight.	4 a.m.	8 a.m.	
1859.										
JAN. 1	Outside Port Phillip Heads	29·895	74·5	...	...	N.N.W.	S.W.	S.W.	S.W.	First part, warm and clear. Second part, suddenly hauls to S.W., smart breeze, fine and clear. Third part, steady breeze and fine, horizon hazy.
„ 2	Off Cape Patton and Cp. Otway	30·550	66·5	S.S.W.	S.S.W.	S.	S.S.E.	S.S.E.	E.S.E.	First part, moderate breeze, hazy, inclining to S. Second part. moderate breeze and fine, pleasant weather. Third part, ditto.
„ 3	Lat. 38° 58′ Long. 142° 57′	30·366	64·0	E.S.E.	E.S.E.	S.S.E.	S.S.E.	S.S.E.	S.S.E.	First part, moderate and steady breeze and pleasant. Second and third parts, ditto.
„ 4	Lat. 37° 18′ Long. 139° 23′	29·999	68·8	S.E. byS.	S.E. byS.	S.E. byS.	E.S.E.	...	...	First part, fine strong and steady breeze, and pleasant clear weather. Second part, strong and steady breeze, cloudy.

177. VOYAGE OF SCHOONER *YARRA* FROM ADELAIDE TO MELBOURNE.

DATE.	SHIP'S POSITION AT NOON.	MEAN READING OF		WIND.						REMARKS.
		Barometer.	Ther.	Noon.	4 p.m.	8 p.m.	Midnight.	4 a.m.	8 a.m.	
1859.										
JAN. 23	Kangaroo Isld. bearing W.N.W. 20 miles	29·880	75·0	S.S.W.	S.S.W.	S.E.	Calm	SE. by E.	S.E. byE.	First part, fine pleasant moderate steady breeze, freshing. Second part, inclining easterly, lightning in N.E., heavy swell. Third part, light airs and fine pleasant weather.
„ 24	Lat. 36° 23′ Long. 138° 37′	29·792	74·7	E.	S.E.	E.S.E.	N.	N.	N.N.W.	First part, fine, pleasant, and warm, little and unsteady breeze. Second part, light airs and pleasant, lightning in N, E., then more wind, shifting to N., and lightning in N.W. Third part, moderate breeze and pleasant weather.
„ 25	Lat. 37° 53′ Long. 138° 45′	29·675	67·0	NW byN	W.	S.	W.	W.	W.	First part, light breeze, pleasant weather, freshing. Second part, very light again, calm, cloudy, lightning. Third part, moderate breeze, cloudy, banks rising to W.; ends with rainy dark weather.
„ 26	Off Cape Bridgewater	29·763	66·7	S.W.	S.W.	S.	S.W.	W.S.W.	W.S.W.	First part, smart squalls and heavy rain, strong steady breeze. Second part, less wind, varying to S. and cloudy, then steady again. Third part, light breeze and cloudy, pleasant weather.
„ 27	Cape Otway	29·897	65·0	W.S.W.	S.W.	N.W.	Calm	Calm	S.W.	First part, very light airs and fine weather. Second part, nearly calm and pleasant; ends dead calm. Third part, calm and fine; ends with light breeze from S.W.

178. VOYAGE OF SCHOONER *YARRA* FROM MELBOURNE TO ADELAIDE.

DATE.	SHIP'S POSITION AT NOON.	MEAN READING OF		WIND.						REMARKS.
		Barometer.	Ther.	Noon.	4 p.m.	8 p.m.	Midnight.	4 a.m.	8 a.m.	
1859.										
FEB. 3	Port Phillip Heads.	30·028	74·2	...	N.E.	N.E. and variable	N.	SW byW	S.W.	First part, wind light and very fine, a good deal of mirage on the horizon. Second part, very light airs from N., this changing to S.W. by the W. Third part, gentle breeze, fine pleasant weather.
„ 4	Cape Otway	29·970	69·3	S.S.W.	S.S.W.	Calm	E.	E.	E.	First part, light breeze and variable, hazy. Second part, dead calm, no motion in the clouds; ends with moderate increasing breeze, hazy, and dew falling. Third part, light airs and foggy, heavy dew falling.
„ 5	Lat. 38° 42′ Long. 142° 56′	29·715	72·0	E. by S.	E.	E.	E.N.E.	N. by W.	N.N.W.	First part, very light airs, hazy weather. Second part, very light airs, fine and pleasant, thick fog on the horizon. Third part, smart breeze, heavy dew; ends with strong breeze, foggy, and wind hauling to S.W.
„ 6	Lat. 38° 54′ Long. 140° 26′	29·700	72·0	W. by N.	W.S.W.	W.S.W.	SW byW	SW byW	S.S.W.	First part, strong breeze, beginning foggy, ending clear. Second part, strong breeze, banks rising in S.W. and cloudy. Third part, steady strong breeze and cloudy, some rain; ends lighter.
„ 7	Lat. 37° 13′ Long. 139° 22′ and Backstairs Passage	29·913	70·3	S.S.W.	S.S.W.	S.W.	S.W.	S.W.	S.S.W.	First part, light wind and fine, clear, pleasant. Second part, smart breeze, cloudy. Third part, steady breeze, fine, and pleasant.

179. VOYAGE OF SCHOONER *YARRA* FROM ADELAIDE TO MELBOURNE.

DATE.	SHIP'S POSITION AT NOON.	MEAN READING OF		WIND.						REMARKS.
		Barometer.	Ther.	Noon.	4 p.m.	8 p.m.	Midnight.	4 a.m.	8 a.m.	
1859.										
FEB. 18	Lat. 36° 21′ Long. 138° 23′	29·788	73·0	N.E.	S.S.E.	E. by S.	N.N.E.	N.N.E.	S.S.W.	First part, fine, pleasant, warm, light winds and calm. Second part, fine weather, wind inclining to E.; ends cloudy, with lightning to N.W. Third part, strong breeze, clear, wind baffling and hauling to S.W.
„ 19	...	29·820	69·3	S.S.W.	S.S.W.	S.S.W.	Calm	Calm	Calm	First part, strong breeze, hazy, fog banks. Second part, moderate breeze, fine, clear; ends calm, heavy swell. Third part, calm, heavy swell, pleasant.
„ 20	...	29·825	70·0	Calm	W. by N.	W. by N.	SW by W	S.W.	S.W.	First part, calm, and then moderate breeze; cloudy. Second part, steady breeze, fine weather, cloudy and damp. Third part, smart steady breeze, damp hazy weather.
„ 21	Cape Otway	29·874	67·5	W.S.W.	W.S.W.	W.S.W.	...	N.	N.E.	First part, moderate breeze, fine and pleasant. Second part, light breeze, fine and very light airs and calm. Third part, moderate breeze, dark, cloudy, and damp.
„ 22	Cape Patton	29·672	64·0	N.E.	E.S.E.	S.S.E.	...	...	...	First part, moderate breeze, dark, cloudy, and rainy. Second part, moderate, fine, and clear. Third part, arrived in Hobson's Bay.

180. The great experience of Capt. D. Pole as a regular trader on this coast renders the following account of a storm which occurred on the 16th of June, 1857, exceedingly valuable, so that I considered myself justified in bringing this interesting document into my nautical report :—

EXTRACT OF A LETTER RECEIVED FROM CAPT. D. POLE, OF THE *FORMOSA*, RELATIVE TO SOME GREAT EASTERLY GALES ON THE COAST.

Melbourne, 22nd November, 1858.

I have long wished to forward some information upon the winds and weather of the coast of Australia to some one who might make it of service to the maritime public. I take this opportunity of giving you an account (only from memory) of one of the great easterly gales on the coast of New South Wales in 1857. I was chief mate of the vessel ; she was a large steamer, belonging to the A. S. N. Co. of Sydney, called the *Governor-General*, and had been built in America.

On June 16th, 1857, during the day, in Sydney, the weather was unsettled, raw, and gusty, and I observed the clouds coming with great force from E.S.E. Still there was not much wind during the day, beyond occasional puffs.

At 5 p.m. we cast loose from the wharf, and went to sea—the three Barometers standing within one-tenth or so of each other, about 29·40 in., 29·50 in., 29·65 in. There was little wind when we got outside, but there was a ponderous swell, tumbling right upon the land, and the weather was particularly dirty and threatening. I mentioned also a vivid flash of lightning on the northern board to the captain, but neither he nor I had ever seen the same kind of weather before, although old coasters.

We expected the wind would come out at N.W., in its usual way, veer round to W., and blow itself out in a gale from S.W., by which time, the wind being off the land, we should have been able to have reached Twofold Bay, and there to have taken shelter. Instead of this, at 6·30 p.m., just as we were losing sight of Sydney Light, in the showers, the wind suddenly began to freshen from S.E. —ship's head S. by E., on account of the heavy swell. At 8 p.m. there was a continual drizzle of rain, and round the horizon (eastern) I observed a faint bank of light, just distinguishable from the murkiness overhead. The Barometers had also fallen, but I shall only give the heights of the Mercurial and Aneroid, as I did not observe the Sympiesometer very attentively.

At 8 p.m. the Mercury was 29·42 in., or thereabouts—the Aneroid one-tenth lower ; and from this, for the next twelve hours, it appeared to me that the former glass fell at about the rate of 0·05 in. every four hours, and then began to fall more rapidly till the height of the gale.

At midnight the gale had increased, and was hourly doing so. The wind steady at E.S.E., with very heavy sea ; the ship surging her lee sponsors completely under.

At 3 a.m., June 17th, the chief engineer reported to me that the connecting pipes of one of the boilers had given way, and that he was fearful for the safety of the boilers themselves, from the heavy rolling of the ship. I reported this to Capt. Cottier, and it was determined we should alter our course to S.E. and by E., so as to bring the ship more head to sea. This was done at 4 a.m. At 8 a.m. it was blowing a hard gale from E., and we commenced sending down all masts and yards.

At noon the gale was at its height ; the wind steady at E., ship's head E.S.E., but she fell off greatly into the trough of the sea. Thick rain throughout. The force of the wind gradually abated from this up to midnight.

About 2 a.m., June 18th, I observed the sky to clear overhead, but with thick rolls of clouds all round. At 5 a.m. we bore up and steered W. for the land, and to allow the engines to pump the ship out quicker. We had then about three feet water in the hold. We stood in for the land till noon without making it. At noon we found the latitude by observation to be that of Cape Dromedary, 150 miles from Sydney. The weather was moderate at this time, the wind veering gradually into the S. At this time we determined on returning to Sydney, the ship being utterly disabled, and the Barometers having fallen fast during the day. The Mercury on the afternoon of the 18th was 29·00 in., and the Aneroid 28·90 in. As we expected, the wind burst upon us at 8 p.m. from S.W., and in one of the gusts blowing the main trysail to shreds. We were now steering N.

June 19th.—At 4 a.m. the sky was completely clear, but there was a heavy gale blowing from W. Ship steering W.N.W., to get under the lee of the land. All the forenoon it blew fiercely, but about 9 a.m. the Barometer began to rise.

About noon we had the high land of Kiama in sight, and as we drew in towards it the Mercury rose rapidly, and the wind died away, finishing off in a gentle breeze from W.N.W.

June 20th, 4 a.m., entered Sydney harbor.

I am, Sir, &c.,

D. POLE.

N.B.—There was a great flood in the River Hunter during this gale.

181. With reference to the turning of the wind, the two following extracts, received from Captain Stoertenbecker, deserve the attention of those who are interested in the navigation of this coast.

EXTRACT OF THE JOURNAL OF THE HAMBURG SHIP *CESAR GODEFFROY*, CAPTAIN STOERTENBECKER, ON THE COAST OF AUSTRALIA.

DATE.	LATITUDE BY OBSERVATION.	LONGITUDE BY OBSERVATION.	BAR.	THER.	WIND.						WEATHER.
					Noon.	4 p.m.	8 p.m.	Midnight.	4 a.m.	8 a.m.	
1856.	° ′	° ′	Inches.								
FEB. 9	44 48	150 9	29·81	60	N.N.E. 5	N.E. 4	N.E. 4	N.E. 3	N.E. by N. 3	N.W. 2	Thick, with rain.
„ 10	42 16	151 16	30·21	65	S.W. 3	W.S.W. 3	W. 2	W. 2	W. 1	W. 1	Fine weather.
„ 11	40 11	153 20	30·26	69·5	N.W. by N. 2	N.W. by N. 2	N.W. by W. 2	N.W. by W. 2	W.N.W. 1	W.N.W. 2	Fine weather.
„ 12	36 50	153 1	30·11	68	W. by S. 3	W. 3	S.W. 3	S. 3	S.S.E. 3	E. 3	Fine weather.
„ 13	34 3	152 50	30·11	72	...	...	...	...	...	...	Fine weather.
„ 14	32 34	153 33	29·91	73	N. by E. 3	N. 4	N. by W. 4	N. by W. 4	W.S.W. 4	W.S.W. 4	Fine weather.
„ 15	29 57	153 55	30·11	75	E. by S. 3	E. by S. 2	E. 2	S.S.E. 2	S.W. 2	S. 3	Fine weather.
„ 16	26 43	...	30·21	78	S. by E. 2	S. by E. 2	S.S.E. 2	S.S.E. 2	S. 2	S. 2	In sight of shore.
„ 17	Moreton Island		...	...	S.E. 2	S.E. by E. 2	... 2	E. 2	N.E. 2	N.E. 2	

182. MORETON BAY TO SYDNEY.

DATE.	LATITUDE BY OBSERVATION.	LONGITUDE BY OBSERVATION.	BAR.	THER.	WIND.						WEATHER.
					Noon.	4 p.m.	8 p.m.	Midnight.	4 a.m.	8 a.m.	
1856.	° ′	° ′	Inches.								
MARCH 1	27 21	154 14	30·01	78	E. 1	E.S.E. 2	E.S.E. 2	S.E. 2	S.E. 3	S.E. 4	Fine weather.
„ 2	...	...	30·21	78	S. to E. 2	S. to E. 2	S.E. by E. 3	S.E. by E. 4	S.E. by E. 4	S.E. by E. 4	Fine weather.
„ 3	28 55	154 11	30·26	75	S.E. 4	S.E. to S. 4	S.E. to S. 4	S.E. to S. 3	S.E. to S. 3	S.E. to S. 3	Fine weather.
„ 4	30 38	153 48	30·31	78	E.S.E. 4	E.S.E. 4	E. 4	N.E. 3	N.E. 3	N.N.E. 3	Fine weather.
„ 5	33 16	152 14	30·16	85	N.E. 2	N.E. 2	N. 2	N.E. 2	N. 2	N. 2	Thunderstorm.
„ 6	32 27	151 39	30·31	76	S.E. by S. 1	S.E. by S. 3	S.E. by S. 4	S.S.E. 2	S.S.E. 1	S.S.E. 1	Overcast, and latter part clearer.
„ 7	off South Head		...	...	S. by E. 2	S. by E. 1	S. by E. 1	N.E. by E. 1	N.E. by E. 2	S.E. 2	Fog, rain squalls, and thunder.

183. It has been already mentioned, in the Introduction to the Nautical Report, that a part of the labors connected with the perusal of logs consists in classifying occurrences in nature according to Melbourne mean time. As many journals as I have found it possible to obtain have been subjected to examination, and the extracted facts arranged in the manner shown in the subjoined extract. The leading principles which guided me in the arrangement of simultaneous occurrences are simply as follows: Every serious disturbance indicated by the meteorological instruments at Melbourne was investigated by opening a register in which were entered, in separate columns, four registrations of the different instruments, made at midnight, 6 a.m., noon, and 6 p.m., on the day on which such a disturbance took place; uniformly with these entries, and in the same columns, all attainable simultaneous readings and phenomena recorded at other places were entered. Any occurrence worthy of notice found to have taken place on board ship or elsewhere was treated in a similar manner.

I have subjoined here such a comparison of events for August, 1858, to illustrate this method of investigation by an example, and I hope to be able to give in my next yearly report a complete series of these registers, the great value of which, for the advancement of our theory on winds and other phenomena, is self-evident, and requires no recommendation.

I selected the 10th, 12th, 21st, and 30th of August, on which days the barometer stood very low at the Melbourne Observatory, and by examining the state of the instruments in other stations, we find facts which, by a greater number of observations and after a longer period of meteorological research, must lead to splendid results.

EXTRACT FROM THE REGISTER OF SIMULTANEOUS

MELBOURNE

Latitude.	Longitude.	Midnight. Barom.	Dry Bulb.	Wet Bulb.	Wind. Direction.	Force*	Rain B. Fog A.	Remarks.	6h. A.M. Barom.	Dry Bulb.	Wet Bulb.	Wind. Direction.	Force	Rain B. Fog A.	Remarks.
August 10th, 1858.															
° ′ ″ S.	° ′ W.														
1 26 14	37 58	...	...	...	S.E. by E.	4	0	Cloudy weather.	...	...	...	...	...	...	...
2 27 28	155 25 E.	...	...	...	N.E.	2	0	Fine weather.	...	...	...	N.E.	2	0	...
3 32 0	7 0 W.	29·91	60	...	S.S.E.	4	B contin.	...	29·90	62	...	S.S.E.	2	0	Weather fine.
4 37 0	7 28	30·00	59	...	E. by N.	4	B	Cloudy weather.	...	...	...	E.N.E.	4	B	Cloudy.
5 37 32	6 51 E.	29·218 53°	49	46	E. by S.	4	0	Cloudy.	29·18 53°	48	44·5	S. by E.	4	...	Cloudy.
6 38 32	156 36	29·04	65	...	S.S.W.	5	0	...	...	...	...	S.S.W.	5	...	...
7 43 5	153 58	...	...	...	S.W.	...	...	Very variable winds.	...	...	...	...	...	...	...
8 45 0	63 0	30·18 69°	41·5	40	W. by N.	5	0	Gale of wind.	29·92 58°	44	42	W. by N.	6	0	Continuing gale.
14 39	84 37	...	...	...	S.E.	4	0	Clear sky.	...	...	...	S.E.	4	0	Clear.
Melbourne.		29·88	54·5	48·6	E.N.E.	4	0	Cloudy.	29·49	50·2	46·1	N.E. by N.	4	0	Cloudy.
August 12th, 1858.															
° ′ S.	° ′ E.														
33 6	153 51	...	...	...	W.	6	...	Gale of wind, remaining so during the whole day.	...	...	...	W.	6	0	Gale of wind.
33 24	152 23	29·15	...	...	W. by N.	7	...		...	...	...	...	...	...	...
40 35	0	29·21	56·3	...	N.E. by N.	5	B	Rain throughout the whole day.	...	...	...	...	...	...	...
42 21	10 15	29·824 55°	55·5	49·5	N.E.	6	...	Cloudy.	29·802 54°	49·5	48·0	N.E.	6	...	Cloudy.
43 48	70 19	29·59 64°	40·0	38·0	W.S.W.	8	...	...	...	...	...	...	...	...	...
Wellington, N.Z.		...	...	...	...	...	...	Weather during the whole day calm and cloudy.				...	...	...	...
Melbourne.		29·66	46·6	46·1	W. by S.	7	B 1	Gale of wind.	29·66	47·0	45·5	W.	6	...	Gale of wind.
9 44	79 48	29·90	77	...	E.S.E.	4	0	Fine and clear.	...	...	...	E.S.E.	...	...	Fine & clear.
August 21st, 1858.															
° ′ S.	° ′ E.														
37 17	17 0 W.	30·27	66	...	N.W.	2	...	Variable wind, lasting almost the whole night and day, with but little change.							...
40 11	10 5 E.	29·74	59	...	N.W. by N.	11	...	Wind veering suddenly round towards W.N.W., with heavy rain.						...	...
38 0	163 20	29·46	57	...	W.S.W.	8	...	Very squally, with lightning and rain.	...	...	...	...	...	...	...
38 0	151 0	...	...	...	W.S.W.	7	...	...	...	...	...	...	...	...	...
40 0	20 0	30·25	...	...	W.	3	...	Light winds and variable.	...	...	...	...	...	...	...
40 0	Coast of N.Z.	...	...	...	...	...	...	Light winds from westward.	...	...	...	...	...	...	...
42 23	98 4	29·29 74°	47·5	46·5	N.W.	11	...	...	29·25 57°	43·5	41·5	W.N.W.	8	...	...
44 7	33 26	30·182 48°	44·5	43·0	W. by N.	3	B contin.	...	30·200 48°	46·0	44·0	N.W.	2	B	Misty rain.
40 0	31 0	30·55	49	...	N.W.	3	...	Variable winds.	The barometer of this ship was not compared.						...
Melb. Observ.		29·52	49·1	43·8	N.W.	6	...	Heavy squalls.	29·58	48·6	43·9	W.N.W.	3	0	...
August 30th, 1858.															
° ′ S.	° ′ E.														
35 59	152 40	...	...	...	W.S.W.	5	...	...	...	...	...	...	...	...	...
40 0	155 0	...	...	...	N.	5	...	...	...	...	...	...	...	...	...
41 0	126 29	30·00 70°	60·5	49·5	W.	2	...	...	29.98 71°	49	...	W.	4	...	...
41 0	8 5	30·10	...	...	N.W.	4	...	Fine.	...	...	...	W.	5	...	...
41 0	54 24	30·20	...	...	S.W. by W.	5	...	Remains almost unchanged all day.				...	...	...	...
43 42	79 32	29·582 46°	43	41	S.W.	6	B contin.	...	29·742 43°	39·7	37·9	W.S.W.	7	...	...
50 29	66 33	30·00	34	...	W.S.W.	4	...	...	...	...	...	...	...	...	...
35 47	47 0	30·41	...	...	S.S.W.	3	...	Wind very variable and light during the whole day.					...	...	...
Melb. Observ.		29·60	49·55	45·7	N.N.W.	4	B 0·5	Heavy drops of rain.	29·52	49·55	47·3	W. by S.	5	B	Misty rain and heavy squalls.

* Force of wind by Beaufort's Notation.

OCCURRENCES.——MONTH OF AUGUST, 1858.

MEAN TIME.

Noon.							6h. p.m.						
Barom.	Dry Bulb.	Wet Bulb.	Wind. Direction.	Wind. Force.	Rain B. Fog A.	Remarks.	Barom.	Dry Bulb.	Wet Bulb.	Wind. Direction.	Wind. Force.	Rain B. Fog A.	Remarks.
...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	N.	4	...	...	...	...	...	N.	5	0	Commenced blowing.
30·04	62	...	S. by E.	2	0	Fine.	29·94	62	...	S. by E.	3	0	Fine.
...	...	...	E. by N.	5	...	...	...	...	...	E. by N.	...	...	Cloudy.
29·158	47·3	44·0	E.N.E.	2	...	...	29·158 51°	48·9	45·5	E.N.E.	2	...	Cloudy.
...	...	...	S.S.W.	5	...	Fresh breeze.	29·00	60·0	...	S.E.	3	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	29·94 66°	44	42	W.	7	0	Gale of wind.
29·98	78·0	...	S.E.	4	...	Fine and clear.	...	...	...	E.S.E.	...	...	...
29·35	56·0	52·0	N.N.E.	5	...	...	29·28	50·5	50·5	S.	0·5	B contin.	Misty.
...	...	...	W. by S.	5	0	Gale of wind.	...	...	...	W. by S.	5	...	Gale of wind.
...	...	..	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	Rain throughout the whole day.
29·802 53°	49·0	47·0	N.E.	6	...	Gale of wind.	29·758 53°	49·5	48·5	N.E.	7	...	Gale of wind.
29·55 60°	35·4	34·0	W.	7	...	Gale of wind.	...	...	...	...	...	...	Gale continuing.
...	...	...	...	...	...	...	...	...	...	...	...	...	...
29·66	53·6	48·2	S.W.	7	...	Gale of wind.	29·68	50·0	46·1	S.W.	6	0·5 B	Heavy squalls.
...	...	...	E.S.E.	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...
30·4	...	...	...	...	...	Almost entirely calm.	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	29·21 79°	42·5	41·5	W.N.W.	5	...	Wind rapidly decreasing.
30·172 47°	45·5	42·0	N.W.	2	B	Misty rain.	30·188 48°	45·5	44·2	N.	3	B	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...
29·58	53·6	50·5	N.N.W.	4	B	Gentle rain.	29·58	53·6	47·7	W. by N.	4	0	...
29·50	65	...	W.	5	...	...	29·30	64	...	N.W.	6	...	At 4.30 S.W., a terrible squall.
...	...	...	...	...	...	Towards 5h. p.m., the wind veered round towards W.; heavy thunder and lightning.							...
29·90 65°	49	...	W.	4	...	...	29·95 66°	...	...	W.N.W.	5	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...
29·742 43°	39·7	37·9	W.S.W.	7	...	...	29·626 45°	45·2	43·5	N.W. by W.	7	...	...
...	...	...	S.W.	4	B	...	...	...	...	...	...	...	...
...	...	..	...	...	...	...	...	...	...	...	...	...	...
29·53	56·5	47·5	W. by S.	6	B	Clearing a little.	29·63	48·6	44·5	W.	2	...	...

184. Captain A. H. Kiehl had the kindness to forward to the Observatory his abstract log for examination, accompanied by the following letter, drawing my particular attention to certain phenomena. The interest attached to this matter is increased by comparison with the simultaneous register given in the foregoing paragraph, and with the monthly abstract of the Flagstaff Observatory.

EXTRACT OF A LETTER FROM THE MASTER OF THE SHIP *HEBE*, ROTTERDAM, REPRINTED FROM THE "*SYDNEY MORNING HERALD*."

Left Hong Kong on the 28th of June, in company with the French ship St. Paul, bound for Sydney and Melbourne; spoke her and resolved to take the eastern passage. Having reached eight degrees latitude north, were compelled to take the Gilolo and Pitt's passage, by reason of adverse winds. Had fine weather all the way. On the 21st of August a heavy head swell was experienced, which increased as the ship proceeded southward. We were then in latitude 19° S., longitude 110° E., and saw a Cape hen in this latitude, which surprised me. On the 22nd, in latitude 19° 30′, longitude 108° E., the wind, although lightly, began to blow in gusts, and the barometers ascended, the swell increasing still. On the 23rd, in latitude 20° 30′ S., longitude 105° 20′ E., saw Cape pigeons and flying fishes at the same time, which I had never seen before during thirteen years. On the 25th, in latitude 23° S., longitude 103° 25′ E., the barometer descended from 30·35 to 30·15; wind shifting to S.W., blowing in gusts with moderate breezes; the seas now running very high, and with great rapidity, from S.S.W. and S. At 9 P.M., strong squalls from S.W.; feeling pretty certain that a cyclone was raging near, double reefed topsails; standing to seaward; weather grew worse; sky overcast and threatening; close reefed topsails and reefed courses, although not blowing strong at the time. Sea very heavy from S.S.W. On the 26th, barometer at a stand; and fearing to run into bad weather over this tack, wore ship to westward, to run out of the heavy seas, and to get a favorable wind the sooner; let out reefs, and soon found ourselves in fine weather again. On the 27th, when the weather changed its appearance, and wind set in from S.E., again, at midnight, being in latitude S. 24° 30′, and longitude E. 105° 30′, I concluded that there had been a cyclone passing in a N.N.E. direction (true), which will have created northerly gales on the coast of Australia. When in latitude 31° 45′ S., longitude 103° 50′ E., on the 2nd of September, a gale set in from the N.N.W., going round to W. and S.W. On the 3rd, barometer 29·64. Wind backing again into N.W. on the 5th, and blowing up heavy, increasing to a furious gale at midnight. Between the 6th and 7th of September, force of wind 10, of squalls 11. Barometer lowest at 0h. 15m. A.M., 29·48; wind hauling W., backing into N.W. again on the 8th, when in 40° 42′ S. latitude, and 123° 2′ E. longitude. On the 9th, at 7 P.M., barometer again down to 29·47; hauling S.W. in a tremendous squall, blowing up with great force from S.W. and S. until the 11th, in latitude 40° S., and longitude 134° 40′ E. On the 13th, in latitude 40° S., longitude 140° E., a gale from N.E. set in; barometer falling from 30·22, on the 11th and 12th, to 29·16. On the 14th, wind hauling N.; at midnight, between the 13th and 14th, force of wind 10. On the 14th, at 6 A.M., barometer lowest, slowly rising; wind W.N.W., with tremendous squalls, for which we were obliged to furl mizentopsails, having closereefed maintopsail, and reefed foresail set, expected them to burst every minute. At 4 A.M., on the 15th, sighted Cape Otway lights; kept her off (E. Mag.). Through Bass's Straits, seas very high. Midnight, between 15th and 16th, passed Deal Island; had the most furious hurricane gust when passing there; wind W.S.W., force from 9 to 11, with a dangerous sea; barometer risen up to 29·70. At noon, on the 17th of September, in latitude 38° 8′, longitude 151° 17′, barometer 30·33, with good weather, wind S.W., yet very heavy seas.

A. H. KIEHL.

185. The great interest attached to the passage through Torres Straits will make the following abstract, and brief account of a voyage in this part of the ocean, a valuable document, especially as it has been drawn up by so intelligent a naval officer as M. de Prevoisin. The same remark, with regard to the instruments used, as was made in the previous document, applies here also.

JOURNAL DU NAVIRE FRANÇAIS *FREHEL*, CAPITAINE TH. DE PREVOISIN, PENDANT LE VOYAGE DE MELBOURNE À SINCAPORE VIÂ TORRES STRAITS, L'AN DE 1858.

DATÉE.	Latitude à Midi.	Longitude à Midi. (Meridian de Paris.)	Midi.		4 Heures après Midi.		Minuit.		4 Heures de Matin.	
			Baromètre Aneroide. (Corrigé.)	Deg. R. (Corrigé.)	Baromètre Aneroide. (Corrigé.)	Deg. R. (Corrigé.)	Baromètre Aneroide. (Corrigé.)	Deg. R. (Corrigé.)	Baromètre Aneroide. (Corrigé.)	Deg. R. (Corrigé.)
	° ′	° ′	Centimètres.		Centimètres.		Centimètres.		Centimètres.	
Juin 7	Banks's Straits		76·40	10·0	76·40	10·0	76·19	10·0	76·29	10·0
„ 8	39 26 S.	147 46 E.	76·36	11·0	76·14	11·0	76·06	11·0	75·76	11·0
„ 9	37 53	149 46	75·66	11·0	76·74	11·0	75·86	11·0	75·94	12·0
„ 10	34 41	151 40	76·04	12·0	76·02	12·0	76·24	12·0	76 32	13·0
„ 11	31 9	153 0	76·40	14·0	76·38	14·0	76·70	14 0	76·70	14·0
„ 12	28 46	154 29	76·48	15·0	76·55	15·0	76·58	15·0	76·58	15·0
„ 13	26 35	155 22	76·55	16·0	76·63	16·0	76·75	16 0	76 75	16·0
„ 14	23 12	155 30	76·65	16·0	76·53	16·0	76·45	16 0	76·33	17·0
„ 15	20 2	154 0	76·20	18·0	76·05	18·0	75·99	18·0	76 09	18·0
„ 16	17 35	151 40	75·95	19·0	75 90	19·0	75·95	19·0	76·05	19·0
„ 17	16 8	150 8	76·00	20·0	75·97	20·0	76·10	20·0	76·10	20·0
„ 18	14 2	148 40	76 20	20·0	75·87	20·0	76·00	20 0	76·07	21·0
„ 19	11 59	146 29	75·95	22·0	75·84	21 0	75·87	21·0	76·87	21·0
„ 20	10 16	143 43	75·75	22·0	75 61	22·0	75·67	21·0	75·77	21·0
„ 21	Torres Straits, east part		75·67	21·0	75·65	21·0	75·77	21·0	75·87	21·0
„ 22	Torres Straits, middle part		75·80	20·0	75 75	21·0	75·90	20·0	75·90	20·0
„ 23	Torres Straits, west part		75 90	20·0	75 75	21·0	75·97	21·0	75·87	21·0
„ 24	10 31	136 8	75·77	21·0	75 75	21·0	77·90	20 0	77·87	21·0
„ 25	8 53	134 45	75·77	21 0	75·65	21·0	75·77	21·0	75·90	20·0
„ 26	7 11	131 20	75·80	20·0	75·67	20 0	75·80	20 0	75·87	21·0
„ 27	6 26	128 0	75·84	21·0	75·71	22·0	75·87	21·0	75 87	21·0
„ 28	7 0	124 58	75·87	21·0	75·71	22·0	75·87	21·0	75·87	21·0
„ 29	7 30	123 2	75·74	21·0	75·71	22·0	75·74	22·0	75·77	21·0
„ 30	7 57	122 0	75·71	23·0	75·68	24·0	75·84	22·0	75·77	21·0
Juillet 1	7 55	120 50	75·71	23·0	75·58	24·0	75·74	22·0	75·77	21·0
„ 2	7 52	119 20	75·67	21·0	75·55	21·0	75·67	21·0	75·73	22·0
„ 3	8 7	118 45	75·71	23·0	75·50	23·0	75·84	22·0	75·83	22·0
„ 4	7 57	118 4	75·61	23·0	75·61	23·0	75·77	21·0	75·67	21·0
„ 5	8 3	117 20	75·61	23·0	75·66	22·0	75·74	22·0	75·87	21·0
„ 6	7 13	116 20	75·66	22·0	75·66	22·0	75·67	21·0	75·77	21·0
„ 7	6 9	114 30	75·71	23·0	75·54	22·0	75·74	22·0	75·74	22·0
„ 8	5 39	112 26	75·71	23·0	75·71	23·0	75·74	22·0	75·67	21·0
„ 9	5 56	111 10	75·71	23·0	75·71	23·0	75·87	21·0	75·87	21·0
„ 10	5 32	109 36	75·64	22·0	75·64	22·0	75·57	21·0	75·77	21·0
„ 11	3 57	108 2	75·67	21·0	75·57	20·0	75·70	20·0	75·70	20·0
„ 12	2 24	106 24	75·67	21·0	75·57	20·0	75·70	20·0	75·80	20·0
„ 13	0 50	105 2	75·74	22·0	75·64	22·0	75·64	22·0	75·71	22·0
„ 14	0 28	104 15	75·59	23·0	75·61	23·0	75·64	22·0	75·71	22·0
„ 15	0 11 N.	102 50	75·59	23·0	75·64	22·0	75·74	22·0	75·71	22·0
„ 16	Rhio Straits		75·59	23·0	75·71	22·0	75·74	22·0	75·71	22·0
„ 17	Singapore Straits		75·69	23·0	...	...	...	...	...	...

JOURNAL DU NAVIRE FRANÇAIS *FREHEL—continué.*

DATÉE.	Direction du Vent.				Observations sur le Temps et la Force du Vent.	Courant en 24 Heurs.
	Première.	Seconde.	Troisième.	Quatrième.		
Juin 7 ...	N.O.	N.N.O.	N.O.	O.N.O.	Coup de vent; temps couvert; pluie et grains.	...
„ 8 ...	O.N.O.	N.O.	O.N.O.	O.	Grande brise; temps couvert; pluie et grains.	21 mille au S.
„ 9 ...	O.S.O.	O.S.O.	S.O.	O.S.O.	Gale of wind; grains violents et fréquents.	15 mille à l'E. 28° N.
„ 10 ...	O.S.O.	O.S.O.	S.O.	S.S.O.	Grande brise; grains violents et fréquents.	19 mille au N. 32° E.
„ 11 ...	S.S.O.	S.S.O.	S.S.O.	S.S.O.	Beau temps; belle brise; petite brise.	37 mille au N.
„ 12 ...	S.S.O.	Baffling		S.S.E.	Beau temps; faible brise; variable et inégale.	25 mille au N. 29° E.
„ 13 ...	S.S.E.	Very baffling		S.S.E.	Temps couvert et coups de vent; variable et contraire; strong brise.	13 mille à l'O. 23° N.
„ 14 ...	S.S.E.	N.E.	E.	E.	Temps couvert, pluie, et coups de vent; pluie et grande brise	Nulle observation.
„ 15 ...	E.	E.N.E.	N.E.	N.E.	Temps couvert, pluie, et coups de vent; pluie et petite brise; contraire.	26 mille à l'O. 28° S.
„ 16 ...	N.E.	N.N.E.	Calme	S.E.	Temps couvert, pluie; petite brise, pluvieux; belle brise.	17 mille à l'O. 40° S.
„ 17 ...	S.E.	S.E.	S.E.	S.E.	Temps couvert, belle brise; clair; douce brise.	17 mille au S. 35° O.
„ 18 ...	S.E.	S.E.	S.E.	E.S.E.	Temps couvert, pluvieux; petite belle brise.	12 mille au N. 20° O.
„ 19 ...	E.S.E.	S.E.	S.E.	S.E.	Beau temps; jolie brise.	10 mille au S. 23° O.
„ 20 ...	S.E.	S.E.	S.E.	S.E.	Couvert, pluvieux; douce brise.	15 mille à l'O. 12° S.
„ 21 ...	S.E.	S.E.	S.S.E.	S.E.	Couvert; coups de vent; douce brise.	15 mille à l'O.N.O.
„ 22 ...	S.E.	S.E.	S.E.	S.E.	Bien fort coups de vent; pluie et grande brise.	Nulle observation, mais grande marée dans le passage.
„ 23 ...	S.E.	S.E.	S.E.	S.E.	Couvert et pluvieux; grande brise avec coups de vent.	
„ 24 ...	S.E.	S.E.	S.E.	S.E.	Couvert et temps à grains, pluie; belle brise.	Nul courant.
„ 25 ...	S.E.	S.E.	E.	N.E.	Fine et jolie brise; couvert et à grains; beaucoup de pluie.	7 mille à l'O.
„ 26 ...	E.	E.	E.	E.	Beau temps; douce brise.	Nulle observation.
„ 27 ...	E.	E.S.E.	S.E.	S.E.	Belle, petite, et douce brise.	En deux jours 45 mille à l'O. 10° S.
„ 28 ...	S.E.	Calme		S.E.	Beau temps, douce, calme; très douce.	24 mille à l'O.
„ 29 ...	S.S.E.	S.E.	S.S.O.	S.S.E.	Beau temps, très douce, calme.	13 mille au N. 28° O.
„ 30 ...	Calme	E.	S.	S.E.	Calme, très douce, beau temps; calme.	44 mille à l'E.
Juillet 1 ...	E.N.E.	S.E.	S.S.O.	N.O.	Petite brise; beau temps, contraire; brise croissant.	16 mille à l'E 33° S.
„ 2 ...	O.N.O.	Calme		S.E.	Calme, contraire; très douce brise.	6 mille au N.
„ 3 ...	N.N.E.	Calme		E.	Beau temps, calme; contraire douce vents; pluie, calme.	9 mille au S. 15° O.
„ 4 ...	Calme	Calme		E.	Calme, grains de vent; doux legér vent; calme.	6 mille au N.
„ 5 ...	Calme	S.S.E.	S.S E.	S.S.E.	Calme, pluvieux; contraire et douces vents; petite brise.	15 mille au S. 32° O.
„ 6 ...	S.S.E.	S.E.	S.E.	E.S.E.	Beau temps; petite brise.	26 mille à l'O. 10° S.
„ 7 ...	E.S.E.	E.S.E.	E.S.E.	E.S.E.	Beau temps; petite brise.	21 mille au S. 29° O.
„ 8 ...	E.	E.	O.	E.	Très faible brise; de 11h. du soir à 6h. du matin faible brise de l'Ouest, pluie et grains.	18 mille à l'O. 30° S.
„ 9 ...	N.E.	N.E.	E.N.E.	E.N.E.	Faible brise, et grains, pluie, eclairs; douce brise.	12 mille au S. 10° O.
„ 10 ...	E.	S.E.	S.E.	S.	Douce brise, faible et contraire; temps couvert; pluie.	Nulle observation.
„ 11 ...	S.O.	S.E.	N.E.	N.N.E.	Pluie; eclairs et tonnerre; vent très variable; grains et calme.	10 mille à l'O.
„ 12 ...	Contraire et changeable	S.O.	S.S.O.	S.S.O.	From 12 to 5 (a.m.), calme, violente pluie, vents changeable; belle brise; faible et beau temps.	17 mille à l'O. 25° S.
„ 13 ...	S.O.	S.	Calme	S.E.	Beau temps, calme; très faible.	30 mille au N. 29° O.
„ 14 ...	S.	S.E.	S.E.	S.E.	Beau temps; très faible brise; eclairs dans le S.O.; orage.	10 mille au N. 19° O.
„ 15 ...	S.O.	Calme		O.S.O.	Orage du S O.; calme; tout le milieu du jour petite brise de O.S.O.	5 mille au N.
„ 16 ...	S.O.	Calme	Changeable		Beau temps; faible brise, très variable; calme; pluie.	Flood and ebb, S.O.
„ 17 ...	Calme	S.S.O.	...	...	Le 17 Juillet à 9h. du soir mouillé à Sincapore.	Flood and ebb.

TH. DE PREVOISIN, Capitaine du *Frehel.*

186. LETTER FROM CAPTAIN PREVOISIN, ACCOMPANYING THE PRECEDING OBSERVATIONS.

J'ai l'honneur de vous addresser, comme je vous l'ai promis, une extrait de mon journal de mer concernant ma derniere traversée de Melbourne à Sincapore.

J'y joins quelques observations qui me paraissent utilis.

J'ai passé Port Phillip Heads le 4 Juin. Le 4, 5, 6, et 7, dans le détroit de Bass, j'ai éprouvé de vent fort du N.E. à l'E.N.E., temps clair. Le 7 j'ai passé Banks's Strait avec du vent de N.O., temps couvert et plaisant. Le 8, 9, et 10, coup de vent qui d'abord commence au N.O., descend à l'ouest, avec accompagnement de grains violents et frequents, et finit au S.S.O., jolie brise. Les vents alisés de S.E. m'ont pris entre le 26 et 27 deg. de lat. S. Le 14, 15, et 16 Juin, j'ai eu le vent de la partie du N.E., temps couvert et pluvieux à grains, avec une legère baisse dans le baromètre.

Jusqu'au détroit de Torres j'ai eu le vent de la partie du S.E., le ciel presque toujours obscurci, ce qui rends l'approche du détroit dangereux faute de bonnes observations. J'ai passé Torres par le chanel de Bligh, qui dans mon opinion est le meilleur. Je n'ai usé que 48 heurs pour le traverser, y compris deux nuits passées au mouillage. Seulement en venant de l'est sur Bligh's entrance, j'ai éprouvé un fort courant de 15 milles au O.N.O., et avec une brise un peu forte, il faut calculer sur 1 mille per heur selon le vent. Dans le détroit de Torres j'ai toujours eu le temps couvert, pluvieux, et de grains frequents, me dérobaient à chaque instant la vue du ciel. J'y suis sorti par le Prince of Wales channel. J'ai observé un courant dans ce passage de 5 à 6 milles. Sur la partie est de N.O. reef (Prince of Wales channel), j'ai vu échoué et abandonné un navire (ship) Americaino, dont je n'ai pas pu voir le nom. Le navire m'a paru de 1000 tonneaux, peint en noir, vergue d'hune simple, trois royale et un main sky yard. Toutes les voiles etaient derangées. Le navire paraissait etre échoué depuis peu de jours, mais il n'y avait personne à bord. En sortant j'ai passé près de terre et de Booby Island, et me suis assuré qu'il n'y avait pas de naufragés à terre. Probablement l'équipage de ce navire aura été sauvé par un navire passant avant moi.

Comme vous pourrez le voir par mon abstract log en quittant le détroit de Torres, j'ai passé par le mer de Banda, celle de Flores et de Java. Dans ces trois mers j'ai éprouvé beaucoup de calmes et de vents très variables. Je crois donc que j'aurais mieux fait de passer dans le sud de Timor, et d'entrer dans le mer de Java par un des étroits à l'est de cette île.

Le monson de S.E. m'a quitté dans le détroit de Tarimata. De ce passage jusqu'à Sincapore je n'ai eu que des alternatives de calme et de brises bien variables. Je crois, Monsieur, vous avoir donné sur ma traversée tous les details possibles. J'irai maintenant à Maurice, et je vous ferai également parvenir de ce dernier port l'extrait de ma traversée de Sincapore à Maurice.

Agréez, Monsieur, &c., &c.,

TH. DE PREVOISIN.

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187. In conclusion, I again express the hope that these few facts which I have introduced into the present report, will induce masters of ships and others interested in Navigation to co-operate with me in compiling the wind and current charts for the coast of Australia. Fully aware of the great difficulties we have to overcome in accomplishing the task which we have undertaken, I cannot but express my conviction, that the combined exertions of nautical men and those of an institution like this Observatory must be crowned with success. The entire want of instruments suitable for sea purposes, made it almost impossible to advance these objects further than has hitherto been done.

With the increasing importance of the Colony, the nautical interests will be enlarged, and will require the full attention of the Legislature. May the time not be far distant, when a complete system of Meteorology at sea will be organized on this coast, so as to secure to this Colony that share in the development of human knowledge to which she is entitled, from her rapid advances in civilization.

GEORGE NEUMAYER.

Flagstaff Observatory, October, 1859.

TERRESTRIAL MAGNETISM.

I.—INTRODUCTION.

188. The circumstances under which the present site of the Observatory was chosen are delineated in the preface to this report, and require no further illustration here; suffice it to say, that previous to the erection of the Observatory, and throughout the whole year, observations have been made for the purpose of examining the nature of local influences, if there were any, and these observations will have to form a part of the explanatory remarks which will accompany the publication of the original observations. By these observations it was determined that the eastern portion of the hill was the most suitable for the purpose of magnetic investigations, and while the meteorological instruments were fixed on the western—the highest part of the enclosure—the various buildings required for the magnetic instruments have been erected where the hill inclines towards the east.

189. The geological formation on which the Observatory stands being decomposed basalt, covered to depths of ten to twenty feet with tertiary gravel, could not appear so unobjectionable as that on the southern banks of the River Yarra (silurian and tertiary), and it was for this reason that I strongly recommended to grant a piece of land on the elevation near the Botanical Gardens reserve, in which opinion I was confirmed, as above stated, by the results of a large number of preliminary observations made in different parts of Melbourne and its suburbs.

190. The buildings which form the Magnetic Observatory are:—

(1.) The horary house.

(2.) The absolute house.

(3.) A round tower, used for astronomical observations.

The relative position of these buildings is as follows:—No. 2 and 3 are erected nearly upon the same meridian (astronomical), 184 feet distant from each other, the absolute house towards north; and 150 feet from the latter towards S.E. the house is erected, in which the horary variations are observed. The levels of No. 2 and 3 differ from each other two feet, the absolute house standing lower, while the level of the ground round the horary house is three feet below the level of the latter. The description of the single buildings may be gleaned from the transactions of the Philosophical Institute, where I have given a full description of the Observatory, and follows hereafter.

191. *The Horary House.*—The house for observation on the horary motions in the three magnetical elements, "declination" or variation of the needle, "inclination" or dip of the needle, and horizontal intensity, is erected, or more properly speaking, sunk into the ground nearly in the centre of the present enclosure; the hill inclines towards the south east. By placing this building in the centre, the object in view was, to prevent accidental disturbances as much as possible, and still to facilitate the communication with the different other buildings of the Observatory. The foundation is laid twelve feet below the surface, and consists of strong timber; upon this are resting the double walls of a room containing the instruments for horary variations; the ground plan of the room represents a polygram of sixteen sides, with a diameter of twelve feet, and the door towards N.E.; a skylight in the centre of its pyramidical roof throws the light upon the mirrors underneath, and a flight of steps leads to the surface. The stands whereupon the instruments are placed consist of sandstone, and are fixed in such a manner as to make it impossible that any motion could be communicated to them through the floor or the walls of the house from wind and other accidental vibrations; the principal object in placing the instruments in this underground building is to prevent sudden changes in temperature, which would

necessarily have an influence upon the readings, although compensation for temperature is applied to the deflecting magnets. The stone pillar, carrying the tubes for the different instruments, is placed nearly in the centre of the room, and a second pillar is placed outside for the purpose of putting thereupon a collimator in order to check the unchanged position of the tubes and mirrors intended for the registration of the instruments. The material of this house, as well as that of the next one, is wood, and the joinings, nails, &c., &c., are of copper and brass, iron having been carefully avoided.

192. *The Absolute House.*—The house for measuring the absolute values of the magnetic elements is situated near the northern boundary of the enclosure in a N.W. direction from the former one. The ground plan of this building is a parallelogram; the axis of the same parallel with the longer side is in the magnetic meridian, and the entrance is towards the E. Two square stone pillars are erected in a similar way to those in the house before described; the instruments put upon these stones are a magnetic theodolite and a dipping circle, which receive the light necessary for reading them by a large skylight in the roof of the building. Different little openings are made through the walls, for the purpose of enabling the observer to take bearings towards well defined distant objects, the azimuth of which having been once carefully ascertained, will assist us in arriving sooner at a correct value of the declination than would otherwise be possible; one of those little openings brings this house in connection with—

193. *A Little Brick Tower.*—In the centre of this circular room a stone pillar is erected, upon which is placed a universal instrument, which is principally made use of for ascertaining the astronomical meridian and transferring it afterwards to the magnetic theodolite. The instrument is placed at such an elevation as to prevent the possibility of the observer's view being obstructed when engaged in taking terrestrial objects, and the revolving nature of the roof admits of observations being made in any part of the sky and towards any direction on the horizon; to enable the eye to be brought to the level of this instrument a circular flight of steps leads up to it; a second isolated pillar is erected near the steps, upon which are placed the chronometers, to bring them within reach of the observer.

194. The instruments in use at the Observatory, for determining the absolute values of the magnetic elements as well as the differential values, are those proposed and constructed by Professor Lamont, and there is no necessity of entering into the details of their construction as most elaborate descriptions of them have been published by that eminent philosopher in various works.—(Handbuch des Erdmagnetismus, Berlin, 1849; Resultate des magnetischen Observatoriums in München während der dreijachrigen Periode 1843, 1844, 1845, München, 1846; Beschrcibung der an der Münchener Sternwarte zu den Beobachtungen verwandten neuen Instrumente und Apparate, München, 1851; Magnetische Ortsbestimmungen ausgeführt an den verschiedenen Punkten des Kœnigreich Bayern, München, 1854; Untersuchung über die Richtung und Staerke des Erdmagnetismus an verschiedenen Punkten des Südwestlichen Europas, München, 1858; Untersuchung über die Richtung und Staerke des Erdmagnetismus in Norddeutschland, &c., &c., München, 1859.)—But an enumeration of the different instruments in my possession may follow here, most of which have been manufactured in the workshops of the Royal Observatory at Munich, except those otherwise described:—The Magnetic Theodolite, with a horizontal circle of 4·8 inches diameter—[Apparatus for measuring the absolute intensity by means of deflections E. and W. and N. and S.]; and for travelling purposes, the apparatus for observing deflections towards E. and W. only; apparatus for measuring the absolute intensity by means of oscillations, [with rings for determining the momentum inertiæ of the different standard magnets, the oscillations are observed in a box of 14 inches square and 8 inches high, which is mounted upon a pillar in the N.E. corner of the absolute house]; in addition to these may be mentioned a very delicate balance, from the workshop of J. Lohmeir, in Hamburg, and several chronometers; a smaller oscillation apparatus must also be mentioned here, which is intended for use on the survey; apparatus for determining the absolute declination, [a larger one, with a thread of suspension four feet long, mounted in the N.W. corner of the absolute house,] and a smaller one which will be described when speaking of the methods of observing the absolute intensity. "Inclinatorium," from the workshop of Inspector Meyerstein, in Göttengen, with a horizontal circle, 7 inches in diameter, and a dipping circle, divided upon glass; to this instrument belong four needles and an apparatus for inverting their poles; it is mounted on a stone pillar in the axis of the absolute house, 3 feet to the N. from the centre. "Differential Inclinatorium," with soft iron bars. "The Horary Variation Instruments," namely declinatorium, intensity apparatus, with deflecting magnet, compensated for temperature; and inclinatorium, with soft iron bars.—(Another

set of the same kind is about to be put up.) A universal instrument of Messrs. Ertel and Son, in Munich. In this list of instruments are also included such instruments as have not been in my possession during the period over which this report extends, but which arrived in the course of the year 1859–60, and are, for contra distinction, included in brackets. In addition to the instruments already named there is an apparatus for determining the value of a part of division in the variation instruments and for the coefficient of temperature of the standard magnets, a large collection of levels, scales, heliotropes, &c., &c.

195. The various buildings forming the Observatory for Terrestrial Magnetism were not completed, and the instruments were not in perfect working order until the middle of July, 1858, when the absolute observations could be taken up, but the hourly observations were systematically registered since the first of May, of the same year, and since then have never been interrupted for a moment. The simultaneous readings of the variation instruments and those of absolute measurements were greatly facilitated by means of an electric bell leading from the absolute house to the horary house. As a general rule, the determination of the absolute values of the magnetic elements was carried out once a month; deviations from this, however, had to be made on several occasions, according to circumstances. Whenever indications were observed of magnetic storms or whenever the sky showed traces of an auroral discharge, the variation instruments were registered most minutely, as can be seen by the observations given in that part of the report treating on the Aurora Australis and magnetic storms.

II.—HORIZONTAL INTENSITY.

196. As mentioned in the introductory remarks, there was no apparatus in my possession, during the first year of the existence of the Observatory, by means of which I could determine the absolute values of the intensity; I had to make use of a differential apparatus, of which the constants had been ascertained at the Royal Observatory, Munich, during my stay there in the years 1855–56. Two magnets, the logarithms of the constants of which were, for No. 1, 0·78115, and for No. 2, 0·78651, have invariably been used for deflections and oscillations, and it may be here stated that the unit, in which the intensity is expressed, is that of Gauss, in millimeters and milligrams. The dimensions of the magnets are as follows:—

	m.m.		m.m.		m.m.
No. 1, length,	96·3	... breadth,	8·8	... thickness,	3·0
No. 2, „	96·3	... „	9·0	... „	3·0

If C signifies the constant of a magnet, T the duration of oscillations reduced to infinitely small arcs, ϕ the angle of deflections corrected for inequality of angles, β and β' the coefficients of expansion for brass and steel respectively, α the coefficient of temperature for the magnet, and t and t' the temperatures observed during the oscillations and deflections, we have, according to Lamont—

$$x = \frac{C}{T\sqrt{\text{sine } \phi}} \left(1 + \beta' t - \tfrac{3}{4}\beta t' + \tfrac{1}{2}\alpha [t - t']\right)$$

The coefficients of temperature of each magnet was frequently ascertained and found to be for—

Magnet. No. 1, 0·0003484
„ No. 2, 0·0003788

By involving in the above equations the coefficient of expansion for brass, $\beta = 0{\cdot}0000235$, and for steel, $\beta' = 0{\cdot}0000135$, we obtain the following logarithmic equations:—

No. 1, log. x = 0·78115 − log. T − ½ log. sine ϕ − 0·0000095 t + 0·0000815 $(t - t')$
No. 2, log. x = 0·78651 − log. T − ½ log. sine ϕ − 0·0000095 t' + 0·0000881 $(t - t')$

The temperatures are to be expressed in Réaumur degrees. It should also be mentioned that the readings of the variation instruments have been taken into consideration and corrections applied, since the time when the horary house was in working order, and the results given in the following have been derived from observations which had been previously reduced to Zero of the intensity scale.

197. *Deflections.*—It has been mentioned above that the deflections were only observed "E. and W.;" The beam by which this was effected measured, between the two rests, 280·8m.m., and the dimensions of the freely suspended needle are—

	m.m.		m.m.		m.m.
Length, =	74·25	... breadth, =	7·4	... thickness, =	4·95.

The correction ρ, applied to the angle of deflection, for inequality of angles, was computed by the formula—

$$\rho = -1{\cdot}0472 \left(\tfrac{1}{3} \text{ tang. } \phi + \tfrac{1}{6} \text{ cotang. } \phi\right) \Delta \phi^2 \text{ min.}$$

where $\Delta\phi$ signifies the inequality of the deflections expressed in degrees. If the readings of the deflections towards W. are ν_1 ν_2 and those towards E. are ν_3 ν_4 then $\Delta\phi_1 = \nu_1 - \nu_2$ and $\Delta\phi_2 = \nu_3 - \nu_4$. The manner in which the observations have been made is illustrated by the accompanying deflection observations, for which the corection ρ has been computed and entered in the column headed "Correction for inequality of angles."

198. DEFLECTIONS

DATE.	Running Number.	Time.	Description of Angle.	Number of Magnet.	Theodolite Readings.	Temperature.	Correction for Inequality of Angles.	Readings of Differential Instruments in Melbourne.		Remarks.
								Declination	Intensity.	
1857.		h. m.			° ′	°				
February 25	1	...	Williamstown Lighthouse	Magnet No. 1	272 54·57	...	...	...	...	*Station in North Melbourne, Stanley-street west.*
„ 25	2	...	Batman's Hill Signal		319 57·82	...	...	...	...	
„ 25	3	3 55	Declination		108 35·85	...	...	...	...	
„ 25	4	...	Deflection 1		85 23·12	...	0·13	...	...	The stand could not be fixed very firmly, which will account for the differences in the readings of the theodolite at the commencement and the end of the series of observations, when pointing towards the points of reference.
„ 25	5	...	„ 2		85 49 45	23·6		...	...	
„ 25	6	...	„ 3		131 42·55	...	−0·03	...	...	
„ 25	7	...	„ 4		131 29·90	...		...	...	
„ 25	8	4 22	Declination		108 36·12	...	...	...	...	
„ 25	9	...	Deflection 4′		131 30 15	...	−0·03	...	...	
„ 25	10	...	„ 3′		131 41·75	24·0		...	...	
„ 25	11	...	„ 2′		86 9·58	...	0·34	...	...	
„ 25	12	...	„ 1′		84 63·20	...		...	...	
„ 25	13	4 38	Declination		108 36·02	...	...	...	...	
„ 25	14	...	Deflection 1	Magnet No. 2	76 53·20	...	0·61	...	...	
„ 25	15	...	„ 2		78 15 90	23·8		...	...	
„ 25	16	...	„ 3		139 44·97	...	0·01	...	...	
„ 25	17	...	„ 4		139 35·55	...		...	...	
„ 25	18	5 13	Declination		108 36 75	...	...	...	...	
„ 25	19	...	Deflection 4′		139 33·95	...	0·01	...	...	
„ 25	20	...	„ 3′		139 43 95	22·9		...	...	
„ 25	21	...	„ 2′		78 15·78	...	0·74	...	...	
„ 25	22	...	„ 1′		76 51·97	...		...	...	
„ 25	23	5 33	Declination		108 40·67	...	...	...	...	
„ 25	24	...	Williamstown Lighthouse		272 58·27	...	...	...	...	
„ 25	25	...	Batman's Hill Signal		320 1 80	...	...	...	...	

Note.—A series of equal altitudes of the sun having been taken, the azimuths of the above mentioned points of reference were ascertained to be as follow: Williamstown Lighthouse, S. 24° 48′ 29″ W.; Batman's Hill Signal, S. 22° 14′ 36″ E. The weather was oppressively hot during the whole of the observations, a gentle breeze blowing from N.N.E., which after 4 o'clock p.m shifted towards S.S.E.

199. DEFLECTIONS.

DATE.	Running Number.	Time.	Description of Angle.	Number of Magnet.	Theodolite Readings.	Temperature.	Correction for Inequality of Angles.	Readings of Differential Instruments in Melbourne.		Remarks.
								Declination	Intensity.	
1857.		h. m.			° ′	°				
September 26	26	...	Williamstown Lighthouse	Magnet No. 1	181 5·65	...	...	...	...	*Station near the Botanical Museum (Observatory Hill).*
„ 26	27	4 5	Declination		45 45·65	...	...	...	...	
„ 26	28	...	Deflection 1		23 8·30	...	0·17	...	...	
„ 26	29	...	„ 2		22 30·75	20·6		...	...	
„ 26	30	...	„ 3		68 26·60	...	−0·16	...	...	
„ 26	31	...	„ 4		69 2·80	...		...	...	
„ 26	32	4 23	Declination		45 46·30	...	...	...	...	
„ 26	33	...	Deflection 4′		69 4·65	...	−0·17	...	...	
„ 26	34	...	„ 3′		68 26·62	20·2		...	...	
„ 26	35	...	„ 2′		22 30·40	...	0·19	...	...	
„ 26	36	...	„ 1′		23 9·40	...		...	...	
„ 26	37	4 37	Declination		45 47·00	...	...	...	...	
„ 26	38	...	Deflection 1	Magnet No. 2	77 9·70	...	−0·21	...	...	The values of the torsion are in both cases too large, and have not been taken into consideration when finding the declinations.
„ 26	39	...	„ 2		76 25·50	19·5		...	...	
„ 26	40	...	„ 3		14 24·90	...	0·27	...	...	
„ 26	41	...	„ 4		15 15·25	...		...	...	
„ 26	42	4 58	Declination		45 46·67	...	...	...	...	
„ 26	43	...	Deflection 4′		15 14·75	...	0·30	...	...	
„ 26	44	...	„ 3′		14 22·05	19·0		...	...	
„ 26	45	...	„ 2′		76 27·95	...	−0·18	...	...	
„ 26	46	...	„ 1′		77 7·47	...		...	...	
„ 26	47	5 10	Declination		45 45·50	...	...	...	...	
„ 26	48	...	Williamstown Lighthouse		181 4·10	...	...	...	...	

Note.—A series of six observations of the altitude of the sun's lower limb having been taken with Ertel's Universal Instrument, the azimuths of different objects have been ascertained and reduced to the magnetic theodolite: Azimuth of Williamstown Lighthouse, 54° 4·85′ W. The weather was very hot, and a fierce wind blowing from the North.

200. DEFLECTIONS.

DATE.	Running Number.	Time.	Description of Angles.	Number of Magnet.	Theodolite Readings.	Temperature.	Correction for Inequality of Angles.	Readings of Differential Instruments in Melbourne.		Remarks.
								Declination	Intensity.	
1857.		h. m.			° ′	°				
October 1	49	...	Williamstown Lighthouse	Magnet No. 2	92 20·65	...	...	...	...	*Station at South Yarra, Church of England Reserve.*
„ 1	50	...	Grammar School, South Yarra		30 22·85	...	...	...	...	
„ 1	51	9 25	Declination		326 29·35	...	...	...	...	
„ 1	52	...	Deflection 1		295 34·95	...	0·10	...	...	
„ 1	53	...	„ 2		295 4 52	10·7		...	...	
„ 1	54	...	„ 3		357 10 30	...	− 0·32	...	...	
„ 1	55	...	„ 4		358 5 62	...		...	...	
„ 1	56	9 52	Declination		326 28·80	...	...	...	...	
„ 1	57	...	Deflection 4′		358 5·70	...	− 0·38	...	...	
„ 1	58	...	„ 3′		357 6·50	11·3		...	...	
„ 1	59	...	„ 2′		294 63 17	...	0·12	...	...	
„ 1	60	...	„ 1′		295 37·25	...		...	...	
„ 1	61	10 16	Declination		326 27 88	...	...	...	...	
„ 1	62	...	Mark A	Magnet No. 1	124 37 90	...	...	...	...	The Theodolite was removed to another place, 84 yards from the Toorak road towards south. Shower of rain.
„ 1	63	11 31	Declination		246 32·15	...	...	...	...	
„ 1	64	...	Deflection 1		223 4·68	...	0·32	...	...	
„ 1	65	...	„ 2		223 53 28	14·1		...	...	
„ 1	66	...	„ 3		269 47·10	...	− 0·08	...	...	
„ 1	67	...	„ 4		269 22 80	...		...	...	
„ 1	68	12 0	Declination		246 31 35	...	...	...	...	
„ 1	69	...	Deflection 4′		269 24·43	...	− 0·06	...	...	
„ 1	70	...	„ 3′		269 45 95	12·9		...	...	
„ 1	71	...	„ 2′		223 49·80	...	0 30	...	...	
„ 1	72	...	„ 1′		222 61 30	...		...	...	
„ 1	73	12 21	Declination		246 30·60	...	...	...	...	
„ 1	74	...	Mark A		124 41 80	...	...	...	...	

Note.—The weather having been rather unsettled and squally, no observation, with the view of ascertaining the azimuth of some distant object, could be made.

201. DEFLECTIONS.

DATE.	Running Number.	Time.	Description of Angle.	Number of Magnet.	Theodolite Readings.	Temperature.	Correction for Inequality of Angles.	Readings of Differential Instruments in Melbourne.		Remarks.
								Declination	Intensity.	
1857.		P.M. h. m.			° ′	°				
October 27	75	...	Chalmers' Church	Magnet No. 2	267 52·17	...	...	...	...	*Station, Flagstaff Hill.*
„ 27	76	...	St. James's Cathedral.		207 29·32	...	...	...	...	
„ 27	77	5 46	Declination		353 15·87	...	...	...	...	The instrument was put up successively in different spots of which only the observations made in the last one may be mentioned here being very near the spot where the Absolute House was erected afterwards.
„ 27	78	...	Deflection 1		24 26·55	...	0·02	...	...	
„ 27	79	...	„ 2		24 15·87	15·8		...	...	
„ 27	80	...	„ 3		321 32·85	...	0·63	...	...	
„ 27	81	...	„ 4		322 50·42	...		...	...	
„ 27	82	6 3	Declination		353 16·40	...	...	...	...	
„ 27	83	...	Deflection 4′		322 49·55	...	0·58	...	...	
„ 27	84	...	„ 3′		321 33·27	14·3		...	...	
„ 27	85	...	„ 2′		24 18·80	...	0·00	...	...	
„ 27	86	...	„ 1′		24 24·10	...		...	...	
„ 27	87	6 18	Declination		353 16·12	...	...	...	...	
„ 27	88	...	St. James's Cathedral.		207 27·95	...	...	...	...	
„ 27	89	...	Chalmers' Church		267 50·82	...	...	...	...	

Note.—With the view of determining the suitability of the Flagstaff Hill as a site for an Observatory, the instrument was put successively in thirteen different stations during the period from December the 23rd, 1857, to January the 1st, 1858; but as these observations have to be published elsewhere, only the series of observations taken on the 26th of December, in the Old Flagstaff Reserve, need find a place here.

202. DEFLECTIONS.

DATE.	RUNNING NUMBER.	TIME.	DESCRIPTION OF ANGLE.	NUMBER OF MAGNET.	THEODOLITE READINGS.	TEMPERATURE.	CORRECTION FOR INEQUALITY OF ANGLES.	READINGS OF DIFFERENTIAL INSTRUMENTS IN MELBOURNE.		REMARKS.
								Declination	Intensity.	
1857.		A.M. h. m.			° ′	°				
DECEMBER 26	90	...	Batman's Hill Signal	Magnet No. 2	177 30 75	...	...	...	...	*Station within the enclosure of the Old Flagstaff Reserve, thirty feet towards the south of the little Transit room.*
„ 26	91	...	Williamstown Lighthouse		151 21·70	...	...	...	...	
„ 26	92	5 29	Declination		352 3·50	...	...	...	...	
„ 26	93	...	Deflection 1		22 35·75	...	−0·34	...	...	
„ 26	94	...	„ 2		23 34·64	11·3		...	...	
„ 26	95	...	„ 3		321 18·95	...	0·17	...	...	
„ 26	96	...	„ 4		320 39·97	...		...	...	
„ 26	97	5 45	Declination		352 3·82	...	...	...	...	
„ 26	98	...	Deflection 4′		320 37·32	...	0·26	...	...	
„ 26	99	...	„ 3′		321 28 15	...		...	...	
„ 26	100	...	„ 2′		23 26·20	12·0	−0·17	...	...	
„ 26	101	...	„ 1′		22 47·30	...		...	...	
„ 26	102	6 2	Declination	Magnet No. 1	352 3·50	...	...	...	...	
„ 26	103	6 24	Declination		352 4 55	...	...	...	...	
„ 26	104	...	Deflection 1		328 44·55	...	0·30	...	...	
„ 26	105	...	„ 2		329 31·35	16·2		...	...	
„ 26	106	...	„ 3		15 17·55	...	−0·12	...	...	
„ 26	107	...	„ 4		14 48·80	...		...	...	
„ 26	108	6 43	Declination		352 5·30	...	...	...	...	
„ 26	109	...	Deflection 4′		14 49 25	...	−0·10	...	...	
„ 26	110	...	„ 3′		15 17·10	17·0		...	...	
„ 26	111	...	„ 2′		329 25 45	...	0 14	...	...	
„ 26	112	...	„ 1′		328 54·32	...		...	...	
„ 26	113	7 0	Declination		352 6·65	...	...	...	...	
„ 26	114	...	Williamstown Lighthouse		151 22·60	...	...	...	...	
„ 26	115	...	Batman's Hill Signal		177 32 60	...	...	...	...	

NOTE.—During the night preceding these observations equal altitudes have been observed with Ertel's Universal Instrument, and from different series the azimuth of Williamstown Lighthouse was derived, and is as follows:—S. 29° 31·54 W.; Batman's Hill Signal, S. 3° 21·89 W.; Spire in B., N. 55° 13·09. E.; these azimuths being transferred already to the Magnetic Theodolite.

203. DEFLECTIONS.

DATE.	RUNNING NUMBER.	TIME.	DESCRIPTION OF ANGLE.	NUMBER OF MAGNET.	THEODOLITE READINGS.	TEMPERATURE.	CORRECTION FOR INEQUALITY OF ANGLES.	READINGS OF DIFFERENTIAL INSTRUMENTS IN MELBOURNE.		REMARKS.
								Declination	Intensity.	
1858.		A.M. h. m.			° ′	°				
JANUARY 26	116	6 40	Declination	Magnet No. 2	333 57·45	...	...	...	...	When the excavation was made in which the house for the observations on the horary motions was to be placed, a series of observations on the Horizontal Intensity was effected. A point of reference could not be used, as it was impossible to see any distant objects from the bottom of the hole.
„ 26	117	...	Deflection 1		303 17·40	...	0·34	...	...	
„ 26	118	...	„ 2		302 20·20	16·3		...	...	
„ 26	119	...	„ 3		364 51·55	...	−0·16	...	...	
„ 26	120	...	„ 4		365 29·55	...		...	...	
„ 26	121	7 0	Declination		333 59·10	...	...	...	...	
„ 26	122	...	Deflection 4′		365 29·50	...	−0·16	...	...	
„ 26	123	...	„ 3′		364 51·05	16·6		...	...	
„ 26	124	...	„ 2′		302 21·33	...	0·35	...	...	
„ 26	125	...	„ 1′		303 19·05	...		...	...	
„ 26	126	7 19	Declination	Magnet No. 1	333 59·47	...	...	...	...	
„ 26	127	7 28	Declination		333 59 15	...	...	...	...	
„ 26	128	...	Deflection 1		311 14·85	...	0·28	...	...	
„ 26	129	...	„ 2		310 28 77	17·2		...	...	
„ 26	130	...	„ 3		356 51·18	...	−0·12	...	...	
„ 26	131	...	„ 4		357 21 55	...		...	...	
„ 26	132	7 41	Declination		333 58 35	...	...	...	...	
„ 26	133	...	Deflection 4′		357 22·70	...	−0·12	...	...	
„ 26	134	...	„ 3′		356 51·95	...		...	...	
„ 26	135	...	„ 2′		310 29·78	18·0	0·28	...	...	
„ 26	136	...	„ 1′		311 16.70	...		...	...	
„ 26	137	7 55	Declination		333 59·75	...	...	...	...	

204. DEFLECTIONS.

DATE.	Running Number.	Time.	Description of Angle.	Number of Magnet.	Theodolite Readings.	Temperature.	Correction for Inequality of Angles.	Readings of Differential Instruments in Melbourne.		Remarks.
								Declination	Intensity.	
1858.		h. m.			° ′	°				
January 28	138	...	St Mary's Chapel	Magnet No. 2	318 17·68	...	...	...	...	These observations were taken on the spot where the Absolute house was erected afterwards. The weather was very favorable and there was a light breeze only.
„ 28	139	...	Chalmers' Church		279 25 93	...	...	...	...	
„ 28	140	...	St James's Cathedral.		218 57·68	...	...	...	...	
„ 28	141	...	Catholic church Emerald Hill		194 35·45	...	...	...	...	
„ 28	142	10 53	Declination		4 46·15	...	...	...	...	
„ 28	143	...	Deflection 1		36 0·70	...	− 0·07	...	...	
„ 28	144	...	„ 2		35 32·10	19·0		...	...	
„ 28	145	...	„ 3		333 14·97	...	0·45	...	...	
„ 28	146	...	„ 4		334 20·15	...		...	...	
„ 28	147	10 17	Declination		4 45·45	...	...	...	...	
„ 28	148	...	Deflection 4′		334 18·28	...	0·45	...	...	
„ 28	149	...	„ 3′		333 14·85	18·8		...	...	
„ 28	150	...	„ 2′		35 33·40	...	− 0·07	...	...	
„ 28	151	...	„ 1′		35 59·78	...		...	...	
„ 28	152	10 30	Declination		4 44·65	...	...	...	...	
„ 28	153	...	Deflection 1	Magnet No. 1	27 56·30	...	− 0·06	...	...	
„ 28	154	...	„ 2		27 33·50	18·9		...	...	
„ 28	155	...	„ 3		341 19·17	...	0·35	...	...	
„ 28	156	...	„ 4		342 9·90	...		...	...	
„ 28	157	10 42	Declination		4 44·32	...	...	...	...	
„ 28	158	...	Deflection 4′		342 10·18	...	0·36	...	...	
„ 28	159	...	„ 3′		341 18·58	19·0		...	...	
„ 28	160	...	„ 2′		27 33·58	...	− 0·05	..	...	
„ 28	161	...	„ 1′		27 55·25	...		...	...	
„ 28	162	10 52	Declination		4 44·05	...	...	...	...	
„ 28	163	...	Chalmers' Church		279 25·80	...	...	...	...	
„ 28	164	...	St. James's Cathedral		218 57·80	...	...	...	...	
„ 28	165	...	Catholic church Emerald Hill		194 35·40	...	...	...	...	

205. DEFLECTIONS.

DATE.	Running Number.	Time.	Description of Angle.	Number of Magnet.	Theodolite Readings.	Temperature.	Correction for Inequality of Angles.	Readings of differential Instruments in Melbourne.		Remarks.
								Declination	Intensity.	
1858.		h. m.			° ′	°				
August 5	166	...	Williamstown Lighthouse	Magnet No. 2	271 53·71	...	...	...	...	*In the Absolute House.*
„ 6	167	...	Trig. Signal Dandenong Ranges.		28 45·46	...	...	...	...	
„ 5	168	...	Chalmers' Church		27 37·56	...	...	...	...	
„ 6	169	12 9	Declination		112 51·68	...	...	44·4	− 1·7	
„ 6	170	...	Deflection 1		81 42·13	...	0·16	44·6	− 1·7	
„ 6	171	...	„ 2		82 21·30	14·0		44·9	− 1·0	
„ 5	172	...	„ 3		144 4·55	...	− 0·20	45·0	− 1·3	
„ 6	173	...	„ 4		143 21·25	...		45·0	− 1·5	
„ 6	174	12 27	Declination		112 51·00	...	...	45·1	− 1·8	
„ 6	175	...	Deflection 4′		143 24·07	...	− 0·19	43·2	− 1·8	
„ 6	176	...	„ 3′		144 6·25	13·3		43·3	− 1·6	
„ 6	177	...	„ 2′		82 21·52	...	0·17	44·0	− 1·0	
„ 6	178	...	„ 1′		81 42·70	...		44·0	− 1·0	
„ 6	179	11 47	Declination		112 52·30	...	...	43·5	− 1·9	This series was entered wrongly, as can be seen by the time.
„ 6	180	12 27	Declination		112 51·00	...	...	45·1	− 1·8	
„ 6	181	...	Deflection 1	Magnet No. 1	135 26·85	...	− 0·16	45·4	− 1·7	
„ 6	182	...	„ 2		136 2·30	14·6		45·8	− 1·6	
„ 6	183	...	„ 3		90 13·97	...	0·14	45·9	− 1·6	
„ 6	184	...	„ 4		89 41·35	...		46·0	− 1·9	
„ 6	185	12 44	Declination		112 50·10	...	...	46·0	− 2·1	
„ 6	186	...	Deflection 4′		89 41·25	...	0·14	46·1	− 2·4	
„ 6	187	...	„ 3′		90 13·65	14·9		46·3	− 2·3	
„ 6	188	...	„ 2′		136 1·12	...	− 0·16	46·8	− 2·1	
„ 6	189	...	„ 1′		135 26·30	...		47·0	− 2·1	
„ 6	190	1 0	Declination		112 49·40	...	...	47·0	− 2·1	
„ 6	191	...	Williamstown Lighthouse		271 53·60	...	...	...	...	
„ 6	192	...	Trig. Signal Dandenong Ranges.		28 45·89	...	...	...	...	

Note.—These observations are influenced apparently by a magnet which was found in the room, after the observations had been completed.

206. DEFLECTIONS.

DATE.	Running Number.	Time.	Description of Angle.	Number of Magnet.	Theodolite Readings.	Temperature.	Correction for Inequality of Angles.	Readings of Differential Instruments in Melbourne.		Remarks.
								Declination	Intensity.	
1858.		A.M. h. m.			° ′	°				
August 19	193	...	Williamstown Lighthouse	Magnet, No. 2	271 53·39	...	...	...	...	*Absolute House*
„ 19	194	9 40	Declination		112 51·00	...	...	47·6	3·9	
„ 19	195	...	Deflection 1		143 51·18	...		47·5	3·6	
„ 19	196	...	„ 2		143 38·75	10·3	−0·02	47·5	3 5	
„ 19	197	...	„ 3		82 45 80	...		47·4	3·3	
„ 19	198	...	„ 4		81 13·12	...	0·90	47·1	3 0	
„ 19	199	10 10	Declination		112 51·53	...		47·0	2·8	
„ 19	200	...	Deflection 4′		81 13·18	...		47·0	2·6	
„ 19	201	...	„ 3′		82 46·50	10·7	0·92	46·9	2·4	
„ 19	202	...	„ 2′		143 38·40	...		46·9	2·1	
„ 19	203	...	„ 1′		143 50·70	...	−0·02	46·9	1·9	
„ 19	204	10 33	Declination		112 51·12	...	...	46 7	1·8	
„ 19	205	...	Deflection 1	Magnet, No. 1	135 48·40	...		46·8	1·6	
„ 19	206	...	„ 2		135 45·80	11·0	0·00	46·8	1 3	
„ 19	207	...	„ 3		90 11·38	...		46 8	1·0	
„ 19	208	...	„ 4		89 42·60	...	0·11	46 8	0 9	
„ 19	209	11 7	Declination		112 50 70	...	...	46·8	0·8	
„ 19	210	...	Deflection 4′		89 39·38	...		46·8	0 8	
„ 19	211	...	„ 3′		90 17·35	12·1	0·19	46·8	0·5	
„ 19	212	...	„ 2′		135 57·55	...		46·8	0·5	
„ 19	213	...	„ 1′		135 33 33	...	−0·07	46·8	0·4	
„ 19	214	11 28	Declination		112 50 65	...	...	46·8	0·4	
„ 19	215	...	Williamstown Lighthouse		271 53·05	...	...	...	...	
„ 19	216	...	Trig. Signal, Dandenong Ranges		28 44·60	...	...	...	...	

Note.—Observations have been made between the hours of 12 and 2 P.M., with the view to ascertain the duration of oscillation, and in the afternoon another series of deflections has been made.

207. DEFLECTIONS.

DATE.	Running Number.	Time.	Description of Angle.	Number of Magnet.	Theodolite Readings.	Temperature.	Correction for Inequality of Angles.	Readings of Differential Instruments in Melbourne.		Remarks.
								Declination	Intensity.	
1858.		h. m.			° ′	°				
August 19	217	...	Williamstown Lighthouse	Magnet, No. 2	271 51·85	...	...	...	...	*Absolute House*
„ 19	218	...	Chalmers' Church		27 35·35	...	...	...	...	
„ 19	219	3 29	Declination		112 44·27	...	...	52·45	0·65	
„ 19	220	...	Deflection 1		143 34·12	...		52·5	0 5	
„ 19	221	...	„ 2		143 40·40	12·0	0·00	52·4	0·5	
„ 19	222	...	„ 3		82 28·50	...		52·4	0·6	
„ 19	223	...	„ 4		81 18·43	...	0·52	52·4	0·6	
„ 19	224	3 46	Declination		112 44·58	...	...	52·3	0·5	
„ 19	225	...	Deflection 4′		81 19·27	...		52·3	0·4	
„ 19	226	...	„ 3′		82 30·38	12·1	0·53	52 3	0·5	
„ 19	227	...	„ 2′		143 39·45	...		52·0	0·5	
„ 19	228	...	„ 1′		143 32·83	...	0·00	51·9	0·4	
„ 19	229	4 12	Declination	Magnet, No. 1	112 44·60	...	...	51·9	0·4	
„ 19	230	...	Deflection 1		89 23·78	...		51·8	0 3	
„ 19	231	...	„ 2		90 19·00	11·9	0·40	51·6	0·4	
„ 19	232	...	„ 3		135 44·03	...		51·4	0·4	
„ 19	233	...	„ 4		135 35·18	...	−0·01	51·2	0·4	
„ 19	234	4 30	Declination		112 45·23	...	...	51·05	0·4	
„ 19	235	...	Deflection 4′		135 34·30	...		51·0	0·4	
„ 19	236	...	„ 3′		135 44·50	11·7	−0·01	51·0	0·4	
„ 19	237	...	„ 2′		90 18·73	...		50 9	0·3	
„ 19	238	...	„ 1′		89 24·23	...	0·40	50·9	0·3	
„ 19	239	4 44	Declination		112 45·75	...	...	50·7	0·2	
„ 19	240	...	Williamstown Lighthouse		271 51·79	...	...	...	...	
„ 19	241	...	Chalmers' Church		27 35·61	...	...	...	...	

208. DEFLECTIONS.

DATE.	Running Number.	Time.	Description of Angle.	Number of Magnet.	Theodolite Readings.	Temperature.	Correction for Inequality of Angles.	Readings of Differential Instruments in Melbourne.		REMARKS.
								Declination	Intensity.	
1858.		h. m.			° ′	°				
September 5	242	...	Williamstn. Lighthous.	Magnet No. 2	271 50·76	...	...	...	...	*Absolute House.*
„ 5	243	...	Trig. Signal Dandenong Ranges.		28 43·06	...	...	...	...	
„ 5	244	9 27	Declination		112 50·08	...	...	41·5	4·6	
„ 5	245	...	Deflection 1		81 37·93	...	0·24	41·1	4·6	
„ 5	246	...	„ 2		82 25·88	12·5		40·95	4·7	
„ 5	247	...	„ 3		143 55·88	...	−0·12	40·9	4·6	
„ 5	248	...	„ 4		143 22·88	...		40·8	4·4	
„ 5	249	9 49	Declination		112 50·60	...	...	40·7	4·4	
„ 5	250	...	Deflection 4′		143 25·55	...	−0·09	40·2	4·0	
„ 5	251	...	„ 3′		143 55·33	13·4		...	...	
„ 5	252	...	„ 2′		82 28·80	...	0·29	40·0	3·5	
„ 5	253	...	„ 1′		81 36·43	...		...	...	
„ 5	254	10 6	Declination	Magnet No. 1	112 51·06	...	...	40·1	2·9	
„ 5	255	...	Deflection 1		89 37·55	...	0·24	40·0	2·7	
„ 5	256	...	„ 2		90 20·05	14·3		40·0	2·5	
„ 5	257	...	„ 3		135 57·10	...	−0·08	39·9	2·4	
„ 5	258	...	„ 4		135 31·93	...		39·9	2·3	
„ 5	259	10 25	Declination		112 51·30	...	...	39·85	2·1	
„ 5	260	...	Deflection 4′		135 31·44	...	−0·08	39·8	1·9	
„ 5	261	...	„ 3′		135 56·65	15·0		39·7	1·7	
„ 5	262	...	„ 2′		90 19·63	...	0·23	39·6	1·6	
„ 5	263	...	„ 1′		89 37·63	...		39·4	1·3	
„ 5	264	10 40	Declination		112 51·36	...	...	39·3	1·1	
„ 5	265	...	Williamstn. Lighthous.		271 50·79	...	...	...	...	
„ 5	266	...	Trig. Signal Dandenong Ranges.		28 43·00	...	...	...	...	

Note.—To this set of observations belongs the set of observations registered under the head "Oscillations."

209. DEFLECTIONS.

DATE.	Running Number.	Time.	Description of Angle.	Number of Magnet.	Theodolite Readings.	Temperature.	Correction for Inequality of Angles.	Readings of Differential Instrtments in Melbourne.		REMARKS.
								Declination	Intensity.	
1858.		h. m.			° ′	°				
October 22	267	...	Williamstn. Lighthous.	Magnet No. 2	280 5·05	...	...	...	...	*Absolute House.*
„ 22	268	...	Trig. Signal Dandenong Ranges		36 57·51	...	...	...	...	
„ 22	269	...	Chalmers' Church		35 48·35	...	...	...	...	
„ 22	270	4 29	Declination		120 55·98	...	...	50 4	7·7	
„ 22	271	...	Deflection 1		151 20·95	...	−0·25	50·4	7·7	
„ 22	272	...	„ 2		152 10·53	15·2		50·4	7·8	
„ 22	273	...	„ 3		90 26·28	...	0·11	50·3	7·8	
„ 22	274	...	„ 4		89 53·83	...		50·3	7·9	
„ 22	275	4 56	Declination		120 56·14	...	...	50·2	8·0	
„ 22	276	...	Deflection 4′		89 54·63	...	0·12	50·1	8·1	
„ 22	277	...	„ 3′		90 28·23	16·0		50·1	8·2	
„ 22	278	...	„ 2′		152 11·90	...	−0·31	50·0	8·3	
„ 22	279	...	„ 1′		151 17·60	...		50·0	8·4	
„ 22	280	5 16	Declination	Magnet No. 1	120 57 59	...	...	49·9	8·5	
„ 22	281	...	Deflection 1		97 52·05	...	0·11	49·9	8·6	
„ 22	282	...	„ 2		98 20·57	16·0		49·8	8·7	
„ 22	283	...	„ 3		144 11·63	...	−0·22	49·7	8·8	
„ 22	284	...	„ 4		143 31·08	...		49·6	8·9	
„ 22	285	5 33	Declination		120 58·10	...	...	49·5	9·0	
„ 22	286	...	Williamstn. Lighthous		280 5·05	...	...	...	...	

210. DEFLECTIONS.

DATE.	Running Number.	Time.	Description of Angle.	Number of Magnet.	Theodolite Readings.	Temperature.	Correction for Inequality of Angles.	Readings of Differential Instruments in Melbourne.		Remarks.
								Declination	Intensity.	
1858.		A.M. h. m.			° ′	°				
November 6	287	...	Wm.stown Lightho.	Magnet No. 1	279 56·44	...	...	...	...	*Absolute House.*
„ 6	288	...	Chalmers' Church		35 40·30	...	...	...	...	
„ 6	289	6 8	Declination		120 56·85	...	...	41·3	14·1	
„ 6	290	...	Deflection 1		97 42·50	...	0·29	41·3	14·0	
„ 6	291	...	„ 2		98 28·85	12·1		40·8	13·9	
„ 6	292	...	„ 3		144 1·48	...	−0·05	40·5	13·8	
„ 6	293	...	„ 4		143 42·05	...		40·2	13·7	
„ 6	294	6 34	Declination		120 58·00	...	...	40·0	13·6	
„ 6	295	...	Deflection 4′		143 41·45	...	−0·05	39·9	13·4	
„ 6	296	...	„ 3′		144 1·12	12·3		39·9	13·2	
„ 6	297	...	„ 2′		98 28·58	...	0·29	39·7	13·0	
„ 6	298	...	„ 1′		97 42·15	...		39·6	12·8	
„ 6	299	6 51	Declination		120 58·45	...	...	39·5	12·7	
„ 6	300	9 33	Declination	Magnet No. 2	120 57·75	...	...	39·7	6·0	
„ 6	301	...	Deflection 1		151 39·75	...	−0·03	39·8	6·0	
„ 6	302	...	„ 2		151 55·85	15·6		39·9	5·9	
„ 6	303	...	„ 3		90 38·65	...	0·37	40·0	5·8	
„ 6	304	...	„ 4		89 40·15	...		40·1	5·7	
„ 6	305	9 49	Declination		120 56·95	...	...	40·3	5·6	
„ 6	306	...	Deflection 4′		89 40·25	...	0·36	40·5	5·4	
„ 6	307	...	„ 3′		90 38·70	17·0		40·8	5·2	
„ 6	308	...	„ 2′		151 56·58	...	−0·04	41·2	5·0	
„ 6	309	...	„ 1′		151 34·00	...		41·4	4·8	
„ 6	310	10 34	Declination		120 53·43	...	...	41·6	4·7	
„ 6	311	...	Wm.stown Lightho.		279 57·10	...	...	...	...	
„ 6	312	...	Chalmers' Church		35 41·08	...	...	...	...	

211. DEFLECTIONS.

DATE.	Running Number.	Time.	Description of Angle.	Number of Magnet.	Theodolite Readings.	Temperature.	Correction for Inequality of Angles.	Readings of Differential Instruments in Melbourne.		Remarks.
								Declination	Intensity.	
1858.		A.M. h. m.			° ′	°				
November 30	313	...	Wm.stown Lightho.	Magnet No. 2	279 35·01	...	...	...	...	*Absolute House.*
„ 30	314	...	Trl. Signal Dand. Ranges		36 27·09	...	...	...	...	
„ 30	315	...	Chalmers' Church		35 18·44	...	...	...	...	
„ 30	316	8 18	Declination		120 36·03	...	...	38·8	17·0	
„ 30	317	...	Deflection 1		151 5·65	...	−0·06	38·9	17·0	
„ 30	318	...	„ 2		151 27·38	19·3		39·1	17·1	
„ 30	319	...	„ 3		90 29·25	...	0·46	39·1	17·0	
„ 30	320	...	„ 4		89 20·90	...		39·2	16·9	
„ 30	321	8 43	Declination		120 35·08	...	...	39·2	16·9	
„ 30	322	...	Deflection 4′		89 20·10	...	0·53	39·2	16·6	
„ 30	323	...	„ 3′		90 30·65	20·5		39·0	16·7	
„ 30	324	...	„ 2′		151 20·95	...	−0·02	38·9	16·5	
„ 30	325	...	„ 1′		151 10·25	...		38·8	16·5	
„ 30	326	9 2	Declination		120 35·12	...	...	38·8	16·1	
„ 30	327	...	Wm.stown Lightho.	Magnet No. 1	279 33·85	...	...	...	...	
„ 30	328	...	Trl. Signal Dand. Ranges		36 26·28	...	...	...	...	
„ 30	329	...	Chalmers' Church		35 17·41	...	...	...	...	
„ 30	330	9 28	Declination		120 33·68	...	...	40·6	15·9	
„ 30	331	...	Deflection 1		97 24·48	...	0·21	40·9	15·8	
„ 30	332	...	„ 2		98 5·45	19·0		41·0	15·7	
„ 30	333	...	„ 3		143 37·10	...	−0·12	41·3	15·5	
„ 30	334	...	„ 4		143 7·50	...		41·6	15·7	
„ 30	335	9 48	Declination		120 32·70	...	...	41·8	15·5	
„ 30	336	...	Deflection 4′		143 7·63	...	−0·12	41·9	15·3	
„ 30	337	...	„ 3′		143 36·03	19·3		41·95	15·45	
„ 30	338	...	„ 2′		98 3·63	...	0·21	42·4	15·3	
„ 30	339	...	„ 1′		97 23·43	...		43·7	16·5	
„ 30	340	10 19	Declination		120 31·85	...	...	43·9	16·7	
„ 30	341	...	Wm.stown Lightho.		279 33·92	...	...	...	...	
„ 30	342	...	Trl. Signal Dand. Ranges		36 25·65	...	...	...	...	
„ 30	343	...	Chalmers' Church		35 17·45	...	...	...	...	

212. DEFLECTIONS.

DATE.	Running Number.	Time.	Description of Angle.	Number of Magnet.	Theodolite Readings.	Temperature.	Correction for Inequality of Angles.	Readings of Differential Instruments in Melbourne.		Remarks.
								Declination	Intensity.	
1859.		A.M. h. m.			° ′	°				
January 26	344	...	Williamstown Lighthouse	Magnet No. 2	280 15·76	...	...	...	...	*Absolute House.*
„ 26	345	...	Chalmers' Church		35 59·63	...	...	...	...	
„ 26	346	10 25	Declination		121 16·20	...	...	51·5	17·2	
„ 26	347	...	Deflection 1		151 28·03	...	−0·35	51·0	16·1	
„ 26	348	...	„ 2		152 25·83	20·7		51·0	15·7	
„ 26	349	...	„ 3		90 50·90	...	0·06	51·0	15·2	
„ 26	350	...	„ 4		90 26·65	...		51·0	14·8	
„ 26	351	10 45	Declination		121 14·78	...	...	51·1	14·3	
„ 26	352	...	Deflection 4′		90 27·12	...	0·04	51·6	14·2	
„ 26	353	...	„ 3′		90 48·45	20·2		51·7	13·0	
„ 26	354	...	„ 2′		152 20·75	...	−0·34	52·0	14·0	
„ 26	355	...	„ 1′		151 24·75	...		51·6	13·2	
„ 26	356	11 4	Declination		121 12·95	...	...	53·3	14·5	
„ 26	357	11 15	Declination	Magnet No. 1	121 11·75	...	...	55·0	14·8	
„ 26	358	...	Deflection 1		143 45·55	...	−0·09	55·6	14·9	
„ 26	359	...	„ 2		144 11·33	19·8		56·0	14·8	
„ 26	360	...	„ 3		98 43·00	...	0·21	56·6	15·0	
„ 26	361	...	„ 4		98 3·58	...		57·0	15·2	
„ 26	362	11 33	Declination		121 10·28	...	...	58·7	16·0	
„ 26	363	...	Deflection 4′		98 2·63	...	0·21	59·4	16·3	
„ 26	364	...	„ 3′		98 42·35	18·7		59·6	16·4	
„ 26	365	...	„ 2′		144 9·65	...	−0·09	60·4	16·9	
„ 26	366	...	„ 1′		143 44·55	...		...	...	
„ 26	367	11 51	Declination		121 8·55	...	...	62·1	18·2	
„ 26	368	...	Williamstown Lighthouse		280 16·50	...	...	...	...	
„ 26	369	...	Chalmers' Church		35 58·80	...	...	...	...	

Note.—During these observations the instruments have been frequently disturbed by flashes of lightning.

213. DEFLECTIONS.

DATE.	Running Number.	Time.	Description of Angle.	Number of Magnet.	Theodolite Readings.	Temperature.	Correction for Inequality of Angles.	Readings of Differential Instruments in Melbourne.		Remarks.
								Declination	Intensity.	
1859.		h. m.			° ′	°				
January 27	370	...	Williamstown Lighthouse	Magnet No. 1	280 15·05	...	...	...	...	*Absolute House.*
„ 27	371	...	Chalmers' Church		35 58·75	...	...	...	...	
„ 27	372	2 41	Declination		121 3·95	...	...	67·0	30·0	
„ 27	373	...	Deflection 1		143 26·85	...	−0·22	67·1	30·6	
„ 27	374	...	„ 2		144 8·48	17·2		67·0	31·0	
„ 27	375	...	„ 3		98 33·10	...	0·06	67·0	31·5	
„ 27	376	...	„ 4		98 11·45	...		66·9	31·6	
„ 27	377	2 56	Declination		121 4·08	...	...	66·5	31·7	
„ 27	378	...	Deflection 4′		98 12·30	...	0·05	66·5	32·4	
„ 27	379	...	„ 3′		98 33·15	17·6		66·4	32·5	
„ 27	380	...	„ 2′		144 7·87	...	−0·24	66·3	32·8	
„ 27	381	...	„ 1′		143 25·00	...		66·3	33·3	
„ 27	382	3 8	Declination		121 4·40	...	...	66·2	33·6	
„ 27	383	...	Deflection 1	Magnet No. 2	90 27·55	...	0·06	66·1	34·4	
„ 27	384	...	„ 2		90 50·80	17·7		66·1	35·0	
„ 27	385	...	„ 3		151 57·08	...	−0·28	66·1	35·0	
„ 27	386	...	„ 4		151 5·30	...		66·0	35·0	
„ 27	387	3 24	Declination		121 4·00	...	...	66·0	34·9	
„ 27	388	...	Deflection 4′		151 3·35	...	−0·34	66·1	33·7	
„ 27	389	...	„ 3′		151 59·85	17·2		66·0	34·0	
„ 27	390	...	„ 2′		90 48·60	...	0·05	66·0	32·8	
„ 27	391	...	„ 1′		90 25·75	...		66·0	32·1	
„ 27	392	3 47	Declination		121 04·43	...	...	66·2	30·9	
„ 27	393	...	Williamstown Lighthouse		280 15·10	...	...	...	...	
„ 27	394	...	Chalmers' Church		35 58·80	...	...	...	...	

214. DEFLECTIONS.

DATE.	Running Number.	Time.	Description of Angle.	Number of Magnet.	Theodolite Readings.	Temperature.	Correction for inequality of Angles.	Readings of Differential Instruments in Melbourne.		Remarks.
								Declination	Intensity.	
1859.		P.M. h. m.			° ′	°				
January 31	395	...	Williamstown Lighthouse	Magnet, No. 1	280 15·43	...	...	...	...	*Absolute House*
„ 31	396	...	Chalmers' Church		35 59·28	...	...	...	...	
„ 31	397	5 39	Declination		121 11·35	...	...	52·2	27·0	
„ 31	398	...	Deflection 1		98 23·65	...	0·08	52·0	28·0	
„ 31	399	...	„ 2		98 37·30	...		52·0	28·0	
„ 31	400	...	„ 3		144 20·15	19 7	−0·33	52·0	29·0	
„ 31	401	...	„ 4		143 30·10	...		52·0	28·8	
„ 31	402	5 52	Declination		121 11·50	...	...	52 0	28·7	
„ 31	403	...	Deflection 4′		143 29·80	...	−0·33	52·0	29·3	
„ 31	404	...	„ 3′		144 19 95	...		52·0	29·3	
„ 31	405	...	„ 2′		98 36·70	19 8	0 02	52·0	29·2	
„ 31	406	...	„ 1′		98 25·10	...		52·0	29·7	
„ 31	407	6 5	Declination		121 11·35	...	...	...	...	
„ 31	408	...	Williamstown Lighthouse		280 15·43	...	...	...	...	

Note.—Previous to this set of observations, observations on the duration of oscillations had been made, the results of which will be found in the corresponding Register.

215. DEFLECTIONS.

DATE.	Running Number.	Time.	Description of Angle.	Number of Magnet.	Theodolite Readings.	Temperature.	Correction for inequality of Angles.	Readings of Differential Instruments in Melbourne.		Remarks.
								Declination	Intensity.	
1859.		h. m.			° ′	°				
February 25	409	...	Wesleyan Chapel	Magnet, No. 1	270 55·50	...	...	...	...	*Station in North Melbourne, Stanley-street west.*
„ 25	410	...	Batman's Hill Signal		208 53·55	...	...	...	...	
„ 25	411	...	Williamstown Lighthouse		161 55·85	...	...	...	...	
„ 25	412	10 37	Declination		357 41·03	...	...	45·9	16·2	Some seven or eight feet distant from the Station, on the 25th February, 1857. Some houses round about have been built since then.
„ 25	413	...	Deflection 1		334 55·00	...	0·03	46·0	16·0	
„ 25	414	...	„ 2		335 11·05	15 0		44·9	16·1	
„ 25	415	...	„ 3		20 45·20	...	−0·31	45·2	17·9	
„ 25	416	...	„ 4		19 54·80	...		47·0	18·3	
„ 25	417	10 55	Declination		357 40·70	...	...	46·8	17·8	
„ 25	418	...	Deflection 4′		19 54·15	...	−0·28	46·6	18·0	
„ 25	419	...	„ 3′		20 39 95	17 0		47·4	17·7	
„ 25	420	...	„ 2′		335 9·60	...	0·02	47·6	17·1	
„ 25	421	...	„ 1′		334 56·70	...		47·7	17·5	
„ 25	422	11 15	Declination		357 39·80	...	...	49·3	19·3	
„ 25	423	...	Deflection 1	Magnet, No. 2	27 30·30	...	−0·35	47·0	17·8	
„ 25	424	...	„ 2		28 27·73	17 8		48·1	20·1	
„ 25	425	...	„ 3		327 25·75	...	0·03	49·6	18 3	
„ 25	426	...	„ 4		327 9·45	...		50·1	18·7	
„ 25	427	11 29	Declination		357 37·05	...	...	51·0	18·9	
„ 25	428	...	Deflection 4′		327 9·90	...	0·03	51·7	18·0	
„ 25	429	...	„ 3′		327 25·80	17 5		51·7	17·1	
„ 25	430	...	„ 2′		28 26·00	...	−0·38	51·4	16·8	
„ 25	431	...	„ 1′		27 27·10	...		51·1	17·0	
„ 25	432	11 44	Declination		357 37·53	...	...	50·9	17·7	
„ 25	433	...	Wesleyan Chapel		270 56·35	...	...	...	...	
„ 25	434	...	Batman's Hill Signal		208 53·98	...	...	...	...	
„ 25	435	...	Williamstown Lighthouse		161 56·24	...	...	...	...	

Note.—By bearings taken to the Universal Instrument, at the Flagstaff Observatory, the following azimuths have been determined:—
Williamstown Lighthouse .. .. S. 24° 55·38 W.
Batman's Hill (Trig. Station) .. .. S. 22° 2·12 E.

216. OSCILLATIONS.

The following series of observations on the duration of oscillations for magnets No. 1 and 2 was made partly in the field, partly in the absolute house; in both cases, the little box having been screwed to the magnetic theodolite. In every one of these sets every *third transit* was observed, and the reduction to infinitely small arcs was effected according to the following principles: $T = \frac{T'}{1 + \frac{1}{16} h_2}$ the oscillating magnet being under the influence of terrestrial magnetism only. T' signifies the mean of the observed intervals, and h the arc of oscillation at the Mth oscillation.

The manner in which the subsequent observations were made, is best understood by looking over the single sets, and it becomes evident that every one for itself offers a means of determining the number of oscillations M, at which the reduction arc had to be observed; as $\frac{h_1}{h_{100}}$ can be derived from two consecutive series, being 100 oscillations distant from each other, and h_1 and h_{100} signifying the arc of oscillation for the first and the hundredth oscillations. M was determined nearly with every single set, and the work was greatly facilitated by a small table having been computed, containing the reductions for each arc of oscillation observed at the Mth oscillation for magnets No. 1 and No. 2.

217. OSCILLATIONS WITH MAGNET No. 1, OBSERVED 25TH FEBRUARY, 1857.

Approximate error of Chronometer 831, 2*h.* 12*m. fast M.M.T.*

H. M. S.	M. S.	M. S.	M. S.	M. S.
9 14 2·1	6 46·4 ...	20 48·5	6 46·0 ...	27 34·5
14·3	46·7 ...	21 1·0	46·0 ...	47·0
26·4	46·6 ...	13·0	46·0 ...	59·0
39·0	46·3 ...	25·3	45·8 ...	28 11·1
51·1	46·1 ...	37·2	45·8 ...	23·0
15 3·3	46·5 ...	49·8	45·7 ...	35·5
15·3	46·6 ...	22 1·9	45·5 ...	47·4
27·4	46·6 ...	14·0	46·0 ...	29 0·0
40·0	46·0 ...	26·0	46·0 ...	12·0
52·3	46·2 ...	38·5	45·7 ...	24·2
	6 46·4		6 45·85	
	406·4		405·85	
Temperature	17·3° ...	... ...	17·3°	
Arc of oscillation, 18m. 9s. ...	...	3·9, 4·2	24m. 55s. ...	... 2·8, 2·1
		4·05		2·45

Time of commencement of this series, 7h. 2m. p.m.

These observations belong to the Deflections from No. 1 to 13.

218. OSCILLATIONS WITH MAGNETS No. 1 AND 2, 26TH SEPTEMBER, 1857.

Approximate error of Chronometer 831, 1*h.* 51*m. fast M.M.T.*

MAGNET NO. 1.

H. M. S.	M. S.	M. S.	M. S.	H. M. S.
7 47 3·3	6 47·9 ...	53 51·2	6 47·8 ...	8 0 39·0
15·8	48·3 ...	54 4·1	47·9 ...	52·0
28·0	48·0 ...	16·0	47·1 ...	1 3·1
40·2	48·6 ...	28·8	47·7 ...	16·5
52·2	48·2 ...	40·4	47·4 ...	27·8
48 5·0	48·0 ...	53·0	48·0 ...	41·0
17·1	47·9 ...	55 5·0	47·0 ...	52·0
29·2	48·1 ...	17·3	48·2 ...	2 5·5
41·3	47·7 ...	29·0	47·4 ...	16·4
54·0	48·0 ...	42·0	48·0 ...	30·0
	6 48·07		6 48·65	
	408·07		407·65	
Temperature	15·6° ...	... ...	15·4°	
Arc of oscillation, 51m. 10s. ...	...	4·1, 3·3	57m. 58s. ...	... 3·0, 1·5
		3·7		2·25

Time of commencement of this series, 5h. 56m. p.m.

These observations belong to the Deflections from No. 26 to 48.

MAGNET No. 2.

H.	M.	S.	M.	S.	M.	S.	M.	S.	M.	S.
7	28	1·0	6	0·5	34	1·5	5	59·5	40	1·0
		12·0		0·4		12·4		59·6		12·0
		23·0		0·1		23·1		59·4		22·5
		33·8		0·3		34·1		59·4		33·5
		44·2		0·6		44·8		59·3		44·1
		55·3		0·3		55·6		59·5		55·1
	29	6·1		0·0	35	6·1		59·5	41	5·6
		17·1		0·0		17·1		59·9		17·0
		28·0		0·0		28·0		59·1		27·1
		38·9		0·1		39·0		59·2		38·2
		49·1		0·2		49·3		59·7		49·0
	30	0·2		0·2	36	0·4		59·6	42	0·0
			6	0·22			5	59·48		
				360·22				359·48		
Temperature				16·0°				15·9°		
Arc of oscillation, 31m. 38s.				{5·0 / 5·0}	37m. 39s.			{3·0 / 2·5}		
				5·0				2·75		

Time of commencement of this series, 5h. 37m. p.m.

219. OSCILLATIONS WITH MAGNETS No. 1 AND 2, 26TH DECEMBER, 1857.

Error of Chronometer 831, 1*h.* 48*m. fast M.M.T.*

MAGNET No. 2.

H.	M.	S.	M.	S.	H.	M.	S.	M.	S.	M.	S.
9	58	10·5	6	1·5	10	4	12·0	6	0·0	10	12·0
		21·8		1·1			22·9		0·1		23·0
		32·3		0·7			33·0		0·4		33·4
		43·3		0·8			44·1	5	59·9		44·0
		54·0		1·0			55·0	6	0·0		55·0
	59	5·1		0·9		5	6·0		0·0	11	6·0
		16·0		0·5			16·5		0·0		16·5
		26·8		0·7			27·5		0·5		28·0
		37·5		0·6			38·1		0·1		38·2
		48·2		0·8			49·0		0·5		49·5
			6	0·86				6	0·15		
				360·86					360·15		
Temperature				24·0°					24·2°		
Arc of oscillation, 10h. 1m. 48s.				{3·5 / 3·7}	7m. 49s.				{1·4 / 1·5}		
				3·6					1·45		

These observations belong to Deflections from No. 90 to 115.

Time of commencement of this series of observations, 8h. 10m. a.m. There was a fresh breeze blowing from N.E., which partly interfered with the observations.

MAGNET No. 1.

H.	M.	S.	M.	S.	M.	S.	M.	S.	M.	S.
9	16	1·8	6	48·6	22	50·4	6	48·6	29	39·0
		14·0		49·0	23	3·0		48·0		51·0
		26·2		49·0		15·2		48·2	30	3·4
		38·5		48·7		27·2		48·6		15·8
		51·0		49·0		40·0		48·2		28·2
	17	3·0		49·1		52·1		48·1		40·2
		15·3		48·8	24	4·1		48·7		52·8
		27·3		48·7		16·0		48·8	31	4·8
		40·0		49·0		29·0		48·1		17·1
		52·0		49·0		41·0		48·0		29·0
			6	48·89			6	48·33		
				408·89				408·33		
Temperature				24·0°				25·0°		
Arc of oscillation, 20m. 9s.				{4·3 / 4·1}	26m. 57s.			{2·5 / 2·0}		
				4·2				2·25		

Time of commencement of this series of observations 7h. 28m. a.m. With reference to the wind the same may be said as above.

220. OSCILLATIONS WITH MAGNET No. 2, 26th JANUARY, 1858.

Approximate error of Chronometer 831, 1*h.* 45*m.* 37*s. fast M.M.T.*

H.	M.	S.		M.	S.		M.	S.		M.	S.		M.	S.
10	46	1·5	...	6	2·5	...	52	4·0	...	6	2·0	...	58	6·0
		12·3	...		1·8	...		14·1	...		1·9	...		16·0
		23·2	...		2·3	...		25·5	...		2·3	...		27·8
		34·0	...		2·0	...		36·0	...		1·5	...		37·5
		45·2	...		1·9	...		47·1	...		2·4	...		49·5
		56·0	...		2·0	...		58·0	...		1·0	...		59·0
	47	7·0	...		2·0	...	53	9·0	...		2·0	...	59	11·0
				6	2·07					6	1·87			
					362·07						361·87			
Temperature			...		24·9°	...			...		23·3°			
Arc of oscillation		49m. 39s.	...			{ 2·6 / 3·5 }		55m. 41s.	...			{ 1·1 / 2·1 }		
						3·05						1·6		

These observations belong to Deflections from No. 116 to 126, and were frequently interrupted by the workmen employed in the erection of the Observatory.
Approximate time of commencement of this series 9h. 0m. 24s. a.m.

221. OSCILLATIONS WITH MAGNETS No. 1 and 2, on the 19th AUGUST, 1858.

Approximate error of Chronometer 831, 1*h.* 28*m.* 7*s. fast M.M.T.*

MAGNET No. 1.

H.	M.	S.		M.	S.		M.	S.		M.	S.		M.	S.
1	26	2·2	...	6	50·8	...	32	53·0	...	6	50·1	...	39	43·1
		14·4	...		51·6	...	33	6·0	...		50·0	...		56·0
		27·1	...		50·7	...		17·8	...		49·8	...	40	7·6
		39·2	...		50·8	...		30·0	...		50·0	...		20·0
		51·3	...		50·9	...		42·2	...		49·7	...		31·9
	27	4·0	...		50·8	...		54·8	...		50·1	...		44·9
		16·1	...		50·7	...	34	6·8	...		50·3	...		57·1
		28·6	...		50·5	...		19·1	...		50·8	...	41	9·9
		41·1	...		50·5	...		31·6	...		50·0	...		21·6
		53·3	...		50·8	...		44·1	...		49·5	...		33·6
				6	50·81					6	50·03			
					410·81						410·03			
Temperature			...		12·9°	...			...		13·0°			
Arc of oscillation		1h. 30m. 4s.	...			{ 4·0 / 4·8 }		36m. 9·50s.	...			{ 3·2 / 2·7 }		
						4·4						2·95		

Commencement of this series at 11h. 58m. a.m.

MAGNET No. 2.

H.	M.	S.		M.	S.		M.	S.		M.	S.		M.	S.
3	40	1·8	...	6	3·2	...	46	5·0	...	6	1·8	...	52	6·8
		12·7	...		3·1	...		15·8	...		2·0	...		17·8
		23·8	...		2·4	...		26·2	...		2·4	...		28·6
		34·4	...		2·8	...		37·2	...		1·7	...		38·9
		45·3	...		2·8	...		48·1	...		1·8	...		49·9
		56·3	...		2·8	...		59·1	...		1·8	...	53	0·9
	41	7·2	...		2·8	...	47	10·0	...		1·8	...		11·8
		18·1	...		2·9	...		21·0	...		1·8	...		22·8
		29·1	...		2·4	...		31·5	...		2·1	...		33·6
		40·0	...		2·5	...		42·5	...		2·0	...		44·5
				6	2·77					6	1·92			
					362·77						361·92			
Temperature			...		12·0°	...			...		12·0°			
Arc of oscillation		44m.	...			{ 5·1 / 5·5 }		50m.	...			{ 3·7 / 2·2 }		
						5·3						3·45		

Commencement of this series at 2h. 11m. 55s. p.m.
These observations belong to Deflections from No. 193 to 216, and 217 to No 241.

In addition to the last series of observations with magnet No. 2, the following series was observed, the commencement of which was at $2^{h.}\ 32^{m.}$ P.M.:—

H. M. S.	M. S.	M. S.	M. S.	M. S.
4 0 4·1	6 2·7 ...	6 6·8	6 1·8 ...	12 8·6
14·9	2·4 ...	17·3	2·3 ...	19·6
25·3	2·7 ...	28·0	1·8 ...	29·8
36·5	2·4 ...	38·9	1·5 ...	40·4
47·3	2·5 ...	49·8	1·8 ...	51·6
58·3	2·4 ...	7 0·7	1·8 ...	13 2·5
1 9·2	2·4 ...	11·6	1·7 ...	13·3
20·1	2·4 ...	22·5	1·5 ...	24·0
31·1	2·2 ...	33·3	1·6 ...	34·9
42·0	2·2 ...	44·2	1·8 ...	46·0
	6 2.43		6 1·76	
	362·43		361·76	
Temperature	12·0° ...	... ...	12·0°	
Arc of oscillation, 4h. 3m. 43s.	{ 4·9 / 5·1 }	9m. 52s.	{ 2·9 / 3·1 }	
	5·0		3·0	

Simultaneously with the oscillations of magnet No. 1 the differential instruments were observed and the mean of the readings was equal to — 0·2. Simultaneously with the oscillations of magnet No. 2 the differential instruments were observed, and the mean of the readings was equal to 0·0. Simultaneously with the oscillations of magnet No. 2, second series, the differential instruments were observed and the mean of the readings was equal to + 0·2.

222. OSCILLATIONS WITH MAGNETS No. 1 AND 2, 5TH SEPTEMBER, 1858.

Approximate error of Chronometer 831, $1h.\ 25m.\ 20s.$ *fast M.M.T.*

MAGNET No. 1.

H. M. S.	M. S.	M. S.	M. S.	H. M. S.
12 47 3·6	6 51·2 ...	53 54·8	6 50·7 ...	1 0 45·5
15·8	51·2 ...	54 7·0	50·8 ...	57·8
28·3	51·3 ...	19·6	50·7 ...	1 10·3
40·2	51·6 ...	31·8	50·8 ...	22·6
52·8	51·3 ...	44·1	50·4 ...	34·5
48 5·0	51·3 ...	56·3	50·5 ...	46·8
17·2	51·7 ...	55 8·9	50·8 ...	59·7
30·0	50·9 ...	20·9	50·7 ...	2 11·6
42·1	51·2 ...	33·3	50·8 ...	24·1
54·3	51·5 ...	45·8	50·2 ...	36·0
	6 51.32		6 50·64	
	411·32		410·64	
Temperature	16·4° ...	... ...	16·8°	
Arc of oscillation, 12h. 51m. 6s.	{ 4·9 / 5·1 }	58m. 5s.	{ 3·0 / 3·1 }	
	5·0		3·05	

Time of commencement of this series 11h. 22m. a.m.

This series of observations belongs to Deflections from No. 254 to 264.

MAGNET No. 2.

H. M. S.	M. S.	M. S.	M. S.	M. S.
1 10 4·3	6 3·0 ...	16 7·3	6 2·3 ...	22 9·6
15·2	2·9 ...	18·1	2·3 ...	20·4
26·0	2·8 ...	28·8	2·4 ...	31·2
37·1	2·6 ...	39·7	2·2 ...	41·9
48·1	2·5 ...	50·6	2·1 ...	52·7
59·1	2·5 ...	17 1·6	2·0 ...	23 3·6
11 9·9	2·6 ...	12·5	2·0 ...	14·5
20·3	2·6 ...	22·9	2·5 ...	25·4
31·6	2·8 ...	34·4	1·9 ...	36·3
42·3	2·7 ...	45·0	1·7 ...	46·7
	6 2·7		6 2·14	
	362·7		362·14	
Temperature	17·1° ...	... ...	17·2°	
Arc of oscillation 1h. 13m. 42s. ...	{ 4·3 / 4·2 }	19m. 54s.	{ 2·9 / 2·3 }	
	4·25		2·6	

Time of commencement of this series 11h. 44m. 44s. a.m.

These observations belong to Deflections from No. 242 to 254.

Simultaneously with the oscillations of magnet No. 2, the following readings of the differential instruments were obtained :—

1·6

−0·95, −0·95, −1·0, −1·6, −1·65, −1·7, −1·7, −1·7, −1·7, −1·8, −1·8, −1·8, −1·85, −1·95, −1·95.

Simultaneously with the oscillations of magnet No. 1, the following readings of the differential instruments were obtained :—

−1·1, −1 6, −1·1, −1·1, −1·1, −1·05, −1·1, −1·1, −1·1, −0·95, −0·95, −0·95, −0·95, −0·95, −0·9, −0·85.

223. OSCILLATIONS WITH MAGNET No. 2, 6TH NOVEMBER, 1858.

Approximate error of Chronometer 831, 0*h.* 5*m.* 46·4*s. fast M.M.T.*

H.	M.	S.	M.	S.	M.	S.	M.	S.	M.	S.
1	26	1·0	6	3·9	32	4·9	6	3·1	38	8·0
		12·0		4·1		16·1		3·0		19·1
		22·8		3·9		26·7		2·6		29·3
		33·9		3·4		37·3		3·7		41·0
		44·7		3·5		48·2		2·8		51·0
		55·5		3·8		59·3		3·5	39	2·8
	27	6·5		3·5	33	10·0		3·0		13·0
		17·3		3·9		21·2		3·0		24·2
		28·2		3·8		32·0		3·0		35·0
		39 3		3·7		43·0		3·2		46·2
			6	3·75			6	3·09		
				363·75				363·09		
Temperature				22·8°				22·8°		
Arc of oscillation, 1h. 29m. 41s.					{ 4·2 5·3 }		35m. 45s.		{ 3·2 2·3 }	
					4·75				2·75	

Time of commencement of this series, 1h. 20m. 23·6s. p.m. This series belongs to the Deflections from No. 300 to 310.
Simultaneously with these observations readings of the differential instruments were taken, the mean value of which was found to be + 15·4.

224. OSCILLATIONS WITH MAGNETS No. 1 AND 2, 30TH NOVEMBER, 1858.

Approximate error of Chronometer 831, 6*m.* 30*s. fast M.M.T.*

MAGNET No. 1.

H.	M.	S.	M.	S.	M.	S.	M.	S.	M.	S.
12	27	7·2	6	52·0	33	59·2	6	51·0	40	50·2
		19·2		52·1	34	11·3		51·0	41	2·3
		32·1		51·9		24·0		50·8		14·8
		44·1		52·0		36·1		51·0		27·1
		56·2		51·9		48·1		51·4		39·5
	28	9 0·5		51·65	35	0·7		50·9		51·6
		21·2		51·9		13·1		50·9	42	4·0
		34·0		51·3		25·3		50·9		16·2
		46·1		51·9		38·0		51·1		29·1
		58·2		51·8		50·0		51·0		41·0
			6	51·84			6	51·0		
				411·84				411·00		
Temperature				21·9°				21·9°		
Arc of oscillation, 31m. 9s.					{ 4·7 4·6 }		38m. 1s.		{ 2·7 2·8 }	
					4·65				2·75	

Time of commencement of this series, 12h. 20m. 37s. p.m. These series of observations belong to the Deflections from No. 330 to 340.
Simultaneously with these observations readings of the differential instruments were taken, the mean value of which was found to be + 22·0.

MAGNET No. 2.

H.	M.	S.	M.	S.	M.	S.	M.	S.	M.	S.
3	38	1·4	6	3·6	44	5·0	6	2·5	50	7·5
		12·2		3·6		15·8		2·3		18·1
		23·2		3·3		26·5		2·6		29·1
		34·2		3·1		37·3		2·8		40·1
		45·1		3·0		48·1		2·6		50·7
		56·1		3·0		59·1		2·7	51	1·8
	39	7·1		2·9	45	10·0		2·7		12·7
		18·1		2·9		21·0		2·5		23·5
		29·0		3·0		32·0		2·2		34·2
		40·0		2·5		42·5		2·8		45·3
			6	3·09			6	2·57		
				363·09				362·57		
Temperature				19·1°				19·0°		
Arc of oscillation, 41m. 41s.					{ 4·0 4·1 }		47m. 45s.		{ 2·3 2·3 }	
					4·05				2·3	

225. OSCILLATIONS WITH MAGNET No. 1, 31st JANUARY, 1859.

Approximate error of Chronometer 408, *John Carter, London,* 2*h.* 21*m.* 30*s. fast M.M.T.*

H.	M.	S.		M.	S.		M.	S.		M.	S.		M.	S.
7	13	1·8	...	6	52·0	...	19	53·8	...	6	51·6	...	26	45·4
		14·0	...		52·2	...	20	6·2	...		51·9	...		58·1
		26·4	...		51·8	...		18·2	...		51·5	...	27	9·7
		39·1	...		52·1	...		31·2	...		51·4	...		22·6
		51·1	...		51·9	...		43·0	...		51·4	...		34·4
	14	3·7	...		52·2	...		55·9	...		51·3	...		47·2
		16·0	...		51·4	...	21	7·4	...		51·7	...		59·1
		28·2	...		52·1	...		20·3	...		51·7	...	28	12·0
		40·4	...		52·1	...		32·5	...		51·5	...		24·0
		53·1	...		52·0	...		45·1	...		51·6	...		36·7
				6	51·98					6	51·56			
					411·98						411·56			
Temperature			...		20·3°		...		...		20·0°			
Arc of oscillation, 7h. 17m. 2s.			...		...	4·1 4·7	23m. 52s.		...			2·6 2·6		
						4·4						2·6		

Time of commencement of this series, 4h. 51m. 31·8s., p.m. This series of observations belongs to the Deflections from No. 397 to 408.
Simultaneously with these observations readings of the differential instruments were taken, the mean value of which was found to be +29·0.

226. OSCILLATIONS WITH MAGNET No. 1, 25th FEBRUARY, 1859.

Approximate error of Chronometer 831, 11*m.* 9*s. fast M.M.T.*

H.	M.	S.		M.	S.		M.	S.		M.	S.		M.	S.
2	43	0·5	...	6	52·2	...	49	52·7	...	6	51·3	...	56	44·0
		13·0	...		52·0	...	50	5·0	...		51·4	...		56·4
		25·2	...		52·1	...		17·3	...		51·7	...	57	9·0
		37·5	...		52·2	...		29·7	...		51·1	...		20·8
		50·0	...		52·1	...		42·1	...		51·4	...		33·5
	44	2·4	...		51·8	...		54·2	...		51·2	...		45·4
		15·0	...		52·0	...	51	7·0	...		51·2	...		58·2
		27·1	...		51·9	...		19·0	...		51·2	...	58	10·2
		39·3	...		51·9	...		31·2	...		51·7	...		22·9
		52·0	...		52·0	...		44·0	...		51·0	...		35·0
				6	52·02					6	51·32			
					412·02						411·32			
Temperature			...		20·6°		...		...		20·2°			
Arc of oscillation, 47m. 0s.			...		...	4·5 4·0	53m. 53s.		...			2·5 2·2		
						4·25						2·35		

Time of commencement of this series, 2h. 31m. 51·5s. p.m. This series of observations belongs to the Deflections from No. 412 to 422.
Simultaneously with these observations readings of the differential instruments were taken, the mean value of which was found to be +17·5.

227. By examining the different sets of deflections and oscillations, we perceive that a set of the one could not in every case be combined with a set of the other, as time or other circumstances did not always permit both observations to be taken. For this reason a quantity μ proportional to the magnetic momentum of the deflecting magnet was determined by computing the results from any available complete set of observations (deflections and oscillations).

$$\mu = \frac{\sqrt{Sin.\,\phi}}{T}\left(1 + \beta' t + \tfrac{3}{2}\beta t^{1} + \tfrac{1}{2}\alpha\,(t + t') + \tfrac{1}{2}\,(m' - m)\,i\right)$$

In this formula, the different letters represent the same quantities as stated in 196, and there is only to be added that m and m' denote the corresponding readings of the variation instrument for Horizontal Intensity, and i the value of a part of division in that instant, which in our case (see Horary Variations) is 0·000149 of the total value. According to these principles, the following table has been computed, giving for different periods, since September, 1855, the value of μ for Magnet No. 1 and No. 2, and showing the decrease in the magnetic momentum.

MAGNET No. 1.

Date of Observations.	Place of Observation.	Number of Complete Sets.	Value of μ	Daily decrease in Value of μ
September 12, 1855	Munich (Bavaria) Royal Observatory ...	3	0·15722	
October 26, 1855	Frankenthal (Palatinate) Observatory ...	2	0·15718	0·000002
February 12, 1856	Ditto ditto ditto ...	1	0·15700	0·000002
„ 20, 1856	Kaiserslautern ditto Field Observation	1	0·15700	0·000000
„ 27, 1856	Frankenthal ditto Observatory ...	1	0·15693	0·000010
July 11, 1856	Hamburg Field Observation	2	0·15670	0·000002
February 26, 1857	Melbourne	1	0·15510	0·000007
September 26, 1857	Ditto	1	0·15434	0·000003
December 26, 1857	Ditto	2	0·15420	0·000002
August 19, 1858	Ditto	2	0·15295	0·000005
September 5, 1858	Ditto	3	0·15283	0·000007
November 30, 1858	Ditto	1	0·15165	0·000010
February 25, 1859	Ditto	1	0·15164	0·000000

MAGNET No. 2.

Date of Observations.	Place of Observation.	Number of Complete Sets.	Value of μ	Daily decrease in Value of μ
September 12, 1855	Munich (Bavaria) Royal Observatory ...	3	0·20558	
February 12, 1856	Frankenthal (Palatinate) Observatory ...	1	0·20506	0·000004
„ 27, 1856	Ditto ditto ditto ...	1	0·20497	0·000006
July 11, 1856	Hamburg Field Observation	2	0·20460	0·000003
September 26, 1857	Melbourne	1	0·20119	0·000008
December 23, 1857	Ditto	1	0·20068	0·000005
January 26, 1858	Ditto	1	0·20055	0·000004
August 19, 1858	Ditto	2	0·19917	0·000002
September 5, 1858	Ditto	3	0·19915	0·000001
November 6, 1858	Ditto	1	0·19806	0·000018
„ 30, 1858	Ditto	1	0·19755	0·000021

228. The quantity μ was taken out from this table by interpolation for the time of observation, and was substituted in the following equation :—

$$x = \text{C.} \frac{\mu}{\sin. \phi} (1 - (3\beta + \alpha) t')$$

according to which the observations have been computed in such cases, where only deflections had been observed.

229. The following contains a series of results derived from the foregoing observations, which have been made in different localities in or near town. As the magnetic instruments for observing the hourly variations had not been in working order previous to the 1st of May, 1858, the results could not be corrected for hourly variations and reduced to mean values, but are to be understood for the time of observation :—

FEBRUARY 25TH, 1857.—North Melbourne.
Magnet No. 1 ..... 2·3800 oscillations and deflections.
Magnet No. 2 ..... 2·3801 deflections only.

SEPTEMBER 26TH, 1857.—Observatory Hill.
Magnet No. 1 ..... 2·3698 deflections and oscillations.
Magnet No. 2 ..... 2·3699 „ „

OCTOBER 1ST, 1857.—South Yarra, Church of England Reserve.
Magnet No. 1 ..... 2·3668 deflections only.
Magnet No. 2 ..... 2·3677 „

OCTOBER 27TH, 1857.—Flagstaff Hill, No. 75—89.
Magnet No. 2.....2·3661 deflections only.

DECEMBER 26TH, 1857.—Flagstaff Hill, No. 90—115.
Magnet No. 1 ..... 2·3719 oscillations and deflections.
Magnet No. 2 ..... 2·3716 „ „

JANUARY 26TH, 1858.—Flagstaff Hill, No. 116—126.
Magnet No. 2 ..... 2·3612 oscillations and deflections.

JANUARY 28TH, 1858.—Flagstaff Hill.
Magnet No. 1 ..... 2·3616 deflections only.
Magnet No. 2 ..... 2·3623 „

230. ABSOLUTE HORIZONTAL INTENSITY DURING THE PERIOD BETWEEN 30TH JULY, 1858, AND 24TH FEBRUARY, 1859.

[GAUSS'S UNIT.]

PERIODS.	VALUE OF H. INTENSITY.	MONTHS.	VALUE OF H. INTENSITY.	QUARTER.	VALUE OF H. INTENSITY.
1858.					
July 30th to August 8th	2·3618				
August 9th to 18th	2·3628	August	2·3625		
August 19th to 28th	2·3628 *				
August 29th to September 7th ...	2·3621				
September 8th to 17th	2·3628	September	2·3624	August, September, and October.	2·3626
September 18th to 27th	2·3622 *				
September 28th to October 7th ...	2·3622				
October 8th to 17th	2·3629	October	2·3630		
October 18th to 27th	2·3638				
October 28th to November 6th ...	2·3553 *				
November 7th to 16th	2·3576 *	November	2·3571		
November 17th to 26th	2·3583				
November 27th to December 6th ...	2·3591 *				
December 7th to 16th	2·3565	December	2·3576		
December 17th to 26th	2·3573 **			November, December, January, and February.	2·3589
December 27th to January 5th, 1859	2·3576				
1859.		January	2·3586		
January 6th to 15th	2·3589				
January 16th to 25th	2·3593 *				
January 26th to February 4th ...	2·3625				
February 5th to 14th	2·3617 *	February	2·3623		
February 15th to 24th	2·3627 **				

NOTE.—In this table two asterisks annexed to the value for a period signify that Magnetic Storms occurred during the period, and one asterisk only, indicates that disturbances of a minor character were observed. The means for the different quarters have been derived from the means for the periods forming the quarter, and not from the months.

The mean value of the Horizontal Intensity for the period between July the 30th, 1858, and February the 24th, 1859, as derived from the means of the single periods is 2·3605 in Gauss's unit, or 5·12136 in the English unit.

III.—MAGNETIC DECLINATION.

Variation of the Needle.

231. The observations on the declination of the needle have been made with the magnetic theodolite, two different methods having been applied for this purpose. In the first place the quantity was absolutely ascertained with the help of a magnet 4·84 inches long, and weighing 970 grains. The same consists of two separate magnets, joined together in such a manner that they do not come in contact with each other. Between these two halves the mirror is fixed, parallel, or nearly so, to the axis of the magnet, and a line passing through the two points of suspension. These two points are required in order to enable the observer to invert the position of the magnet, with the view of eliminating the "collimation of the mirror." When used, the magnet is enclosed in a suitable case, which can be screwed to the theodolite; the thread of suspension, unspun silk, is from 24 to 26 inches long; an index attached to the thread enables the observer to ascertain the torsion of the thread. The manner in which this is effected can best be learned by inspecting the observations following below; and there is only to be further remarked, that for this purpose use is made of a torsion weight, to which a small magnet is fixed. This instrument has not been used in the field, but in the "absolute house" only, where every precaution could be taken to secure and to check the unchanged position of the same. From the pillar upon which the theodolite is placed various distant objects can be observed, and through a small window towards the south, bearings can be taken towards a "universal instrument" placed in a round brick tower. By this arrangement the position of the astronomical meridian could easily be transferred from the above mentioned "universal instrument" to the magnetic theodolite, thus greatly facilitating the determination of the azimuths of various well defined distant objects.

232. The determination of the meridian with the universal instrument has been frequently repeated, as well as the transfer to the magnetic theodolite, and the following azimuths, as seen from this instrument have been ascertained by a great number of single observations:—

Lantern of the Lighthouse in Williamstown ...	...	S.	30° 1·79 W.
Trigonometrical Station on the Dandenong Ranges	...	S.	86° 50·00 E.
Spire of Chalmers' Church on Eastern Hill ...	...	S.	85° 41·96 E.

The collimation of the circle of the magnetic theodolite was invariably ascertained before and after the observations on the position of the magnetic meridian, by means of bearings to the above marks.

233. The observations on the absolute magnetic declination could not be commenced until the beginning of August, 1858, when the "absolute house" was so far advanced as to admit of a long series of observations being taken.

Observations have been made—

1. On the 7th of August, 1858.
2. „ 4th of September, 1858.
3. „ 25th of November, 1858; and
4. „ 25th of January, 1859.

Here may follow the original readings, with those of the differential instruments placed alongside.

234. ABSOLUTE MAGNETIC DECLINATION.

DATE.	Running Number.	Time.	Magnet.	Description of Angle.	Theodolite Readings.	Readings of Differential Declinatorium.	REMARKS.
1858.		A.M. h. m.			° ′		
August 7 ...	436	...	...	Williamstown Lighthouse	271 53·65	...	...
„ 7 ...	437	...	...	Chalmers' Church	27 37·19	...	...
„ 7 ...	438	...	...	Trig. Signal, Dandenong Ranges	28 45·62	...	...
August 7 ...	439	9 29	Torsion.	Zero	25 59·38	47·0	Magnet above.
„ 7 ...	440	...		S.W. N.E.	22 18·83	47·1	...
„ 7 ...	441	...		Zero	26 14·70	47·0	...
„ 7 ...	442	...		S.E. N.W.	29 48·03	47·0	...
„ 7 ...	443	...		Zero	25 53·68	46·7	...
„ 7 ...	444	...		S.W. N.E.	22 24·40	46·7	...
„ 7 ...	445	...		Zero	26 16·18	46·7	...
„ 7 ...	446	...		S.E. N.W.	29 57·10	46·1	...
„ 7 ...	447	10 18		Zero	25 57·55	45·9	...
August 7 ...	448	11 28	Declination.	Zero	23 45·08	45·3	Screws above.
„ 7 ...	449	...		S.W. N.E.	23 41·13	45·7	...
„ 7 ...	450	...		Zero	23 45·60	45·6	...
„ 7 ...	451	...		S.E. N.W.	23 49·88	45·4	...
„ 7 ...	452	...		Zero	23 45·20	45·9	...
„ 7 ...	453	...		S.W. N.E.	23 41·50	45·5	...
„ 7 ...	454	...		Zero	23 45·93	45·1	...
„ 7 ...	455	...		S.E. N.W.	23 49·38	45·2	...
„ 7 ...	456	P.M. 12 40		Zero	23 45·25	45·2	...
August 7 ...	457	12 45	Torsion.*	Zero	204 30·30	46·8	Magnet below.
„ 7 ...	458	12 54		„	25 52·40	47·2	„ above.
„ 7 ...	459	1 10		„	204 37·28	50·75	„ below.
„ 7 ...	460	...		„	25 57·55	45·90	„ above.
August 7 ...	461	2 40	Declination.	Zero	203 5·25	51·00	Screws below.
„ 7 ...	462	...		„	23 42·70	51·05	„ above.
„ 7 ...	463	...		„	203 4·50	51·15	„ below.
„ 7 ...	464	...		„	23 41·50	51·40	„ above.
„ 7 ...	465	...		„	203 6·05	51·30	„ below.
„ 7 ...	466	...		„	23 43·93	51·20	„ above.
„ 7 ...	467	...		„	203 1·65	51·20	„ below.
„ 7 ...	468	3 23		„	23 45·48	50·90	„ above.
August 7 ...	469	...	...	Williamstown Lighthouse	271 53·65	...	

* Interruption in the Observations.

235. ABSOLUTE MAGNETIC DECLINATION.

DATE.	Running Number.	Time.	Magnet.	Description of Angle.	Theodolite Readings.	Readings of Differential Declinatorium.	REMARKS.
1858.		A.M. h. m.			° ′	°	
September 4 ...	470	...	...	Williamstown Lighthouse	271 50·94	...	...
„ 4 ...	471	...	...	Trig. Signal, (Dandenong Ranges)	28 42·86	...	...
September 4 ...	472	9 17	Torsion	Zero	203 16·73	42·0	Magnet below.
„ 4 ...	473	...		S.W. N.E.	199 46·85	42·0	...
„ 4 ...	474	...		Zero	203 37·08	41·9	...
„ 4 ...	475	...		S.E. N.W.	207 10·68	41·4	...
„ 4 ...	476	...		Zero	203 20·55	41·2	...
„ 4 ...	477	...		S.W. N.E.	199 51·90	41·0	...
„ 4 ...	478	...		Zero	203 38·05	40·95	...
„ 4 ...	479	...		S.E. N.W.	207 16·38	41·0	...
„ 4 ...	480	10 7		Zero	203 27·18	41·1	...
September 4 ...	481	10 28	Declination	Zero	203 6·08	40·3	Screws below.
„ 4 ...	482	...		S.W. N.E.	203 2·68	40·3	...
„ 4 ...	483	...		Zero	203 7·03	40·2	...
„ 4 ...	484	...		S.E. N.W.	203 10·40	40·1	...
„ 4 ...	485	...		Zero	203 6·48	40·2	...
„ 4 ...	486	...		S.W. N.E.	203 3·10	40·25	...
„ 4 ...	487	...		Zero	203 6·90	40·2	...
„ 4 ...	488	...		S.E. N.W.	203 10·53	40·3	...
„ 4 ...	489	10 54		Zero	203 6·63	41·0	...
September 4 ...	490	11 18	Declination	Zero	203 6·28	41·05	Screws below.
„ 4 ...	491	...		„	23 45·33	41·2	„ above.
„ 4 ...	492	...		„	203 4·70	41·9	„ below.
„ 4 ...	493	...		„	23 48·25	42·3	„ above.
„ 4 ...	494	...		„	203 3·38	42·9	„ below.
„ 4 ...	495	...		„	23 48·12	43·0	„ above.
„ 4 ...	496	...		„	203 6·15	43·1	„ below.
„ 4 ...	497	12 0		„	23 47·45	43·1	„ above.
September 4 ...	498	P.M. 2 11	Torsion	Zero	24 28·53	49·3	Screws above.
„ 4 ...	499	...		„	203 18·05	49·9	„ below.
„ 4 ...	500	...		„	24 43·12	50·0	„ above.
„ 4 ...	501	...		„	203 22·65	50·0	„ below.
„ 4 ...	502	...		„	24 37·98	49·9	„ above.
„ 4 ...	503	2 49		„	203 22·10	50 0	„ below.
September 4 ...	504	4 10	Declination	Zero	202 57·90	49·3	Screws below.
„ 4 ...	505	4 20		„	23 42·12	49·1	„ above.
September 4 ...	506	...	...	Williamstown Lighthouse	271 50·76	...	...
„ 4 ...	507	...	...	Trig. Signal, (Dandenong Ranges)	28 43·06	...	...

236. ABSOLUTE MAGNETIC DECLINATION.

DATE.	RUNNING NUMBER.	TIME.	MAGNET.	DESCRIPTION OF ANGLE.	THEODOLITE READINGS.	READINGS OF DIFFERENTIAL DECLINATORIUM.	REMARKS.
1858.		h. m.			° ′		
November 25 ...	508	...	...	Williamstown Lighthouse	279 35·11	...	...
„ 25 ...	509	...	...	Chalmers' Church	35 18·73	...	...
November 25 ...	510	9 14	Torsion.	Zero	30 48·03	33·1	Magnet above.
„ 25 ...	511	...		S.W. N.E.	26 36·03	33·5	...
„ 25 ...	512	...		Zero	31 9·40	33·6	...
„ 25 ...	513	...		S.E. N.W	35 20·55	33·9	...
„ 25 ...	514	...		Zero	30 59·40	34·0	...
„ 25 ...	515	...		S.W. N.E.	26 54·80	34·5	...
„ 25 ...	516	...		Zero	31 14·23	34·9	...
„ 25 ...	517	...		S.E. N.W.	35 26·25	35·3	...
„ 25 ...	518	9 53		Zero	31 3·78	36·1	...
November 25 ...	519	10 9	Declination.	Zero	31 33·88	38·0	Screws above.
„ 25 ...	520	...		S.W. N.E.	31 29·10	38·0	...
„ 25 ...	521	...		Zero	31 33·80	38·0	...
„ 25 ...	522	...		S.E. N.W.	31 37·85	38·1	...
„ 25 ...	523	...		Zero	31 32·73	39·1	...
„ 25 ...	524	...		S.W. N.E.	31 27·95	40·0	...
„ 25 ...	525	...		Zero	31 33·45	40·8	...
„ 25 ...	526	...		S.E. N.W.	31 37·30	41·5	...
„ 25 ...	527	10 32		Zero	31 31·90	42·5	...
November 25 ...	528	...	...	Williamstown Lighthouse	279 35·00	...	...
„ 25 ...	529	...	...	Chalmers' Church	35 18·60	...	...
November 25 ...	530	10 41	Declination.	Zero	210 45·4	43·0	Screws below.
„ 25 ...	531	...		„	31 33·48	43·0	„ above.
„ 25 ...	532	...		„	210 48·75	42·9	„ below.
„ 25 ...	533	11 15		„	31 30·43	42·8	„ above.
November 25 ...	534	...	Torsion.	Zero	31 14·85	...	Screws above.
„ 25 ...	535	...		„	210 55·55	...	„ below.
November 25 ...	536	...	...	Williamstown Lighthouse	279 39·40	...	...
„ 25 ...	537	...	...	Chalmers' Church	35 23·10	...	...

237. ABSOLUTE MAGNETIC DECLINATION.

DATE.	Running Number.	Time.	Magnet.	Description of Angle.	Theodolite Readings.	Readings of Differential Declinatorium.	REMARKS.
1859.		P.M. h. m.			° ′ ″		
January 25 ...	538	...	...	Williamstown Lighthouse	280 15·85	...	...
„ 25 ...	539	...	...	Chalmer's Church	35 59·49	...	...
January 25 ...	540	3 24	Torsion.	Zero	214 23·75	59·7	...
„ 25 ...	541	...		S.W. N.E.	208 24·68	59·1	...
„ 25 ...	542	...		Zero	214 41·80	59·8	...
„ 25 ...	543	...		S.E. N.W.	219 31·98	60·3	...
„ 25 ...	544	...		Zero	213 20·00	58·9	...
„ 25 ...	545	...		S.W. N.E.	207 17·15	58·0	...
„ 25 ...	546	...		Zero	213 44·25	57·4	...
„ 25 ...	547	...		S.E. N.W.	219 31·10	56·7	...
„ 25 ...	548	4 14		Zero	212 57·85	55·8	...
January 25 ...	549	4 48	Declination.	Zero	211 24·80	55·0	...
„ 25 ...	550	...		S.E. N.W.	211 31·15	54·9	...
„ 25 ...	551	...		Zero	211 25·15	54·5	...
„ 25 ...	552	...		S.W. N.E.	211 19·10	54·1	...
„ 25 ...	553	...		Zero	211 25·95	54·0	...
„ 25 ...	554	...		S.E. N.W.	211 32·05	53·9	...
„ 25 ...	555	...		Zero	211 25·85	53·7	...
„ 25 ...	556	...		S.W. N.E.	211 19·55	53·7	...
„ 25 ...	557	5 13		Zero	211 26·13	53·7	...
January 25 ...	558	5 13	Declination.	Zero	211 26·15	53·6	Screws above.
„ 25 ...	559	...		„	32 4·10	53·5	„ below.
„ 25 ...	560	...		„	211 26·15	53·5	„ above.
„ 25 ...	561	...		„	32 6·53	53·5	„ below.
„ 25 ...	562	...		„	211 25·68	53·4	„ above.
„ 25 ...	563	...		„	32 7·15	53·3	„ below.
„ 25 ...	564	...		„	211 23·90	53·3	„ above.
„ 25 ...	565	5 46		„	32 6·65	53·4	„ below.
January 25 ...	566	5 58	Torsion.	Zero	32 12·00	53·5	Screws above.
„ 25 ...	567	6 9		„	210 30·85	53·4	„ below.
January 25 ...	568	...	...	Williamstown Lighthouse	280 15·76	...	...
„ 25 ...	569	...	...	Chalmer's Church	35 59·61	...	...

238. The second method applied for ascertaining the magnetic declination is a differential one, and was frequently made use of. For this purpose the magnetic theodolite was used as well, but with a smaller magnet attached to it, which is also used for determining the horizontal intensity. The torsion was in this case ascertained by the help of deflections.

If V signifies the reading of the magnet, when undeflected, $\frac{1}{2}(u_1 + u_2)$ the corrected arithmetical means of the readings of the magnet, when deflected east and west of the meridian—and lastly ϕ the angle of deflection—we have for ϑ or the correction for torsion.

$$\vartheta = \left[V - \tfrac{1}{2}(u_1 + u_2) \right] \frac{\text{Cos } \phi}{2 \text{ Sin}^2 \tfrac{1}{2} \phi}$$

As the magnet in this apparatus cannot easily be taken out, and no arrangement has been made to invert the magnet, the collimation of the mirror attached to it could not be eliminated in the way described in the first method, but had to be ascertained and brought into account. This was effected by taking simultaneous observations with the above described apparatus, and the last one. After having applied every correction required to the readings according to both methods, the difference between the two results will give the collimation of the mirror in the intensity apparatus.

The fact, that previous to the 7th of August, 1858, the declination could not be determined absolutely, but only with the differential apparatus, renders it desirable that it should be shown, that this collimation of the mirror is not subject to irregular and very considerable changes, if the apparatus is properly treated, and for this reason I subjoin here the following results on its determination at different periods.

During the month of September, 1855, the value of the collimation of the mirror was derived from observations at the Royal Observatory at Munich, and was found to be + 37·46′. A subsequent observation made at Hamburg on the 11th of July, 1856, gave the same value, while the following shows the value of the same quantity derived from observations taken in the absolute house of the Observatory at different times.

On the 6th of August, 1858, from observations taken with the differential apparatus, the collimation of the mirror was +38·25′; if we make use of those deflections only, made with magnet No. 2 (166—179); and

On the 5th of September, 1858, it was found to be +38·86′; while on the 30th of November, 1858, and the 27th of January, 1859, it amounted to +39·84 and +39·71 respectively.

239. Applying these values to the reading of the magnet in the differential apparatus, the greatest part of the deflection observations, as given above, have been made use of, in order to increase the number of observations on the declination at the different periods, and the following is a summary of the results obtained:—

On the 25th of February, 1857.—The magnetic theodolite was fixed on a rising ground in North Melbourne, off Stanley-street, free from local influences; from deflection observations, No. 1 to 25, the declination of the needle was, at $4^{h}\cdot\ 18^{m}\cdot$ p.m., 8° 33·3′ E.

On the 25th of September, 1857.—The place of observation in this case was on the hill near the Botanic Gardens, and from observations No. 26 to 48, the declination was found to be 8° 46·03′ E. at $4^{h}\cdot$ p.m.

When it was determined that the Flagstaff Hill should be selected as the site for the Observatory, observations were frequently made, of which those only, made on the 26th of December, 1857, viz: No. 90 to 115, may be quoted here. The time of observation was early in the morning, and during the latter part of the observations a heavy gale of wind commenced to blow from the north. The result was 8° 14·82′ E.

The whole of these results are to be understood without regard to horary variations, as no observations with differential instruments were available at that time.

240. The readings of the variation instrument have been classified in periods of ten days duration, and from simultaneous observations, made partly with the absolute apparatus and partly with the differential one, the following table has been computed.

MAGNETIC DECLINATION DURING THE PERIOD BETWEEN 1st MAY, 1858, AND 24th FEBRUARY, 1859.

PERIODS.	VALUE OF DECLINATION.	MONTHS.	VALUE OF DECLINATION.	QUARTER.	VALUE OF DECLINATION.
	° ′		° ′		° ′
May 1st to 10th	8 27·91 E. **				
May 11th to 20th	8 28·20 „ *	May	8 28·19		
May 21st to 30th	8 28·55 „ *				
May 31st to June 9th	8 29·17 „ *			May, June, and July	8 29·38
June 10th to 19th	8 29·44 „ *	June	8 29·55		
June 20th to 29th	8 30·05 „ **				
June 30th to July 9th	8 30·18 „				
July 10th to 19th	8 30·49 „	July	8 30·38		
July 20th to 29th	8 30·49 „				
July 30th to August 8th	8 31·30 „				
August 9th to 18th	8 31·35 „	August	8 31·51		
August 19th to 28th	8 31·89 „ *				
August 29th to September 7th ...	8 30·96 „			August,	
September 8th to 17th	8 32·59 „ [1]	September	8 30·97	September, and	8 30·77
September 18th to 27th	8 30·97 „ *			October	
September 28th to October 7th ...	8 30·44 „ *				
October 8th to 17th	8 29·76 „	October	8 29·89		
October 18th to 27th	8 29·47 „				
October 28th to November 6th ...	8 29·21 „ *				
November 7th to 16th	8 29·73 „ * [2]	November	8 29·23		
November 17th to 26th	8 29·25 „				
November 27th to December 6th ...	8 28·85 „ *			November,	
December 7th to 16th	8 28·95 „	December	8 29·70	December, and	8 29·79
December 17th to 26th	8 33·83 „ ** [3]			January	
December 27th to January 5th ...	8 31·31 „				
January 6th to 15th	8 32·33 „ [4]				
January 16th to 25th	8 31·19 „ *	January	8 31·20		
January 26th to February 4th ...	8 35·00 „ [5]				
February 5th to 14th	8 30·57 „ *	February	8 30·40		
February 15th to 24th	8 30·29 „ **				

NOTES.

** * In this Table two asterisks annexed to the value for a period signify that Magnetic Storms occurred during the period, and one asterisk only, indicates that disturbances of a minor character were observed.

[1] During this period rain fell to a great depth on the 11th and 12th of September, which might have caused a slight error of the reading, as there was a great deal of water underneath the floor of the horary house.

[2] On the 13th of November an inundation round the pillars caused great disturbances in the readings of the instruments.

[3] The immensely heavy fall of rain on the 20th, 21st, and 22nd, caused apparently in this case the great irregularity in the value of the magnetic declination.

[4] On the 9th and 10th of January water collected round the pillar of the instrument, caused by a considerable fall of rain.

[5] The heavy fall of rain on the 26th of January seems to have influenced the above value.

The means for the quarters and also for the year have not been ascertained from the means for the single months, but from the periods, rejecting every one of them which could be thought objectionable on account of some undue influence. According to these principles the mean magnetic declination was found to be 8° 30·01′ E. for the period between the 1st of May, 1858, until the 24th of February, 1859.

241. After having stated my intention, in the introductory remarks, not to publish fragments of the magnetic survey it might appear inconsistent to give, in this paragraph, the magnetic declination for various localities, but the fact, that these values are very important for practical surveying, induced me to subjoin the table following below. The observations have been corrected for hourly variations by using the readings of the differential instrument at the Flagstaff Observatory, and it was in this case not thought desirable to reduce the results to one and the same moment of time, but to give the mean values for each respective day of observation. In most cases the astronomical meridian was ascertained by means of observations taken with a universal instrument from the workshop of Messrs. Ertel and Son, of Munich; whenever a different mode had to be adopted mention thereof will be found amongst the notes at the foot of the table.

TABLE SHOWING THE MAGNETIC DECLINATION (VARIATION OF THE COMPASS) FOR DIFFERENT LOCALITIES IN THE COLONY OF VICTORIA.

(N.B.—Only those localities can appear in this Table for which the reduction of the magnetic observations, or the observations themselves, have been completed already.)

NAME OF LOCALITY.	TIME OF OBSERVATION.			VALUE OF THE MAGNETIC DECLINATION.		REMARKS.
	Year.	Day of Month.	Hour.	For Time of Observation.	Reduced to the Mean for Day of Observation.	
			H. M.	° ′	° ′	
BALLAARAT (East[1]) ...	1859	Nov. 26 ...	10 0 a.m.	8 8·03 E.	8 10·15 E.	In the garden of the Prince Albert Hotel, sufficiently distant from all disturbing causes.
„ (Black Hill)	„	Dec. 2 ...	2 40 p.m.	8 16·32 E.	8 9·31 E.	Perpendicularly above the large shaft on the top of the hill.
„ (East) ...	„	„ 3 ...	6 10 a.m.	8 6·51 E.	8 11·65 E.	Prince Albert Hotel.
„ (N.W. of Black Hill)	„	„ 3 ...	11 27 a.m.	8 9·51 E.	8 9·30 E.	Between Mopoke and Inkermann Gully.
BELFAST	1859	Dec. 15 ...	8 46 a.m.	7 36·22 E.	7 47·49 E.	On an elevation on the northern side of the entrance into the harbor. Azimuths:—Warrnambool Lighthouse, N. 94° 30·21′ E.; Signal on Tower Hill, N. 53° 9·49′ E.
BLACKWOOD (Mount) ...	1859	Nov. 23 ...	2 30 p.m.	8 43·11 E.	8 36·62 E.	The stand was erected near the Trigonometrical Signal.
CAMPERDOWN	1859	Dec. 12 ...	7 50 a.m.	7 41·49 E.	7 50·19 E.	The station was in the garden of Mr. Scott, some 120 feet from the dwelling house, Bason Banks.
CRESSY	1859	Dec. 7 ...	6 50 a.m.	8 2·56 E.	8 10·77 E.	Close to the southernmost public house.
CUMMINS[2] (near Mount Disappointment)	1858	Dec. 6 ...	6 57 a.m.	8 36·25 E.	8 41·67 E.	At the Observatory of the Geodetic Survey, on the 145° meridian.
FOOTSCRAY	1859	May 7 ...	12 24 p.m.	8 31·67 E.	8 28·99 E.	During this observation rain descended in heavy drops, which caused, apparently, great disturbance in the torsion of the thread.
GEELONG[3]	1859	Nov. 6 ...	3 0 p.m.	9 0·27 E.	8 54·08 E.	The station was close to the road to Melbourne. Azimuths:—Montpellior, pole of pavilion, S. 40° 56·48′ W.; church spire, S. 1° 27·62′ E.
GREENHILL[4]	1859	Nov. 30 ...	11 40 a.m.	8 18·99 E.	8 18·27 E.	Near the residence of Mr. Surplice, on the top of a little volcanic hill.
NORTH MELBOURNE[5] (Stanley-street)	1859	Feb. 25 ...	11 4 a.m.	8 27·98 E.	8 27·78 E.	Nearly in the same position as two years ago.
MELBOURNE (Botanical Gardens reserve)	1859	May 3 ...	4 0 p.m.	8 42·79 E.	8 40·34 E.	Outside the fence, on a spot which had been proposed as a site for the Observatory.
MELTON	1859	Nov. 21 ...	6 32 p.m.	7 25·98 E.	7 24·48 E.	The observation was made in the township.
MOONEE PONDS[6] ...	1858	Oct. 7 ...	11 42 a.m.	8 39·44 E.	8 45·65 E.	At the Observatory of the Geodetic Survey, on the 145° meridian.
PENTLAND	1859	Nov. 22 ...	4 30 p.m.	6 43·70 E.	6 42·23 E.	This observation was made in the accommodation paddock opposite the Pentland Hotel.
PORTLAND	1859	Dec. 17 ...	Noon	7 30·87 E.	7 27·93 E.	This station was chosen in the northern part of the town, on the right side of the Belfast road, near the beach. Azimuth of Lighthouse, S. 38° 41·33′ E.
QUEENSCLIFF[3] ...	1859	Nov. 7. ...	5 0 p.m.	8 55·81 E.	8 52·34 E.	The station was chosen between the Upper and the Lower Lighthouse, close to the beach.
SPRINGHILL[4]	1859	Dec. 1 ...	3 30 p.m.	7 40·67 E.	7 33·99 E.	Some thirty feet from the Trigonometrical Signal.
WARRNAMBOOL[7] ...	1859	Dec. 14 ...	1 40 p.m.	7 55·21 E.	7 45·44 E.	The observation was made on a little hill near the beach, close to the road to Allansford. Azimuth of Lighthouse. S. 48° 45·21′ W.

1 The universal instrument was put up with such a view as to facilitate the transferring the meridian of the same to the stations at Blackhill and a hill N.W. of Blackhill, by means of heliotrop signals.

2 The orientation of the circle of the magnetic theodolite was ascertained by means of bearings towards the altazimuth instrument in the Observatory, in which Mr. Ellery kindly assisted.

3 In these cases the collimation of the magnetic theodolite was ascertained by means of a vertical circle, which could be screwed on to the magnetic theodolite.

4 Through the kindness of Mr. Surplice I was permitted to make use of the 5-inch theodolite, in his possession, with which the necessary observations for determining the meridian have been carried out.

5 The orientation of the circle was ascertained by bearings towards the universal instrument at the Flagstaff Observatory, but as it was impossible to see the Observatory from the station a third instrument was put up for the purpose of transferring the bearings.

6 As in No. 2; the magnetic observations have been taken when the magnetic elements were disturbed by the effect of an Aurora Australis, which had been observed during the morning.

7 On the morning of the 14th December the magnetic elements were greatly disturbed by the display of an Aurora Australis; hence the great difference between the mean of the day and the value of the declination at the time of observation.

IV.—MAGNETIC INCLINATION.

242. The observations made on the dip of the needle were made with an inclinatorium, from the workshop of Inspector Meyerstein, of Göttingen, and it appears desirable to add some few explanatory remarks, tending to illustrate the construction of the instrument and the different modes of observation. The vertical circle, of 9·8-inch diameter, is divided upon a fine mirror, 11 inches square, the single degrees being subdivided into 4 parts, each of the latter therefore represent 15 min. of arc; this mirror forms the back part of a wooden box, the fore part of which is provided with glass, so as to protect the needles against the influence of currents of air and still to admit of an easy reading of the instrument; the horizontal circle is 6·7 inches, and is divided upon silver, reading to one minute with the assistance of two Verniers. The needles used for determining the magnetic inclination are 9·5 inches long, and weigh 254·5 grains, their axles are of steel, and rest, when in working order, upon layers of agate; the reading was invariably effected by keeping the eye in a line with the image produced by the point of the needle in the mirror and the point itself, thus avoiding errors of parallax; a magnifying glass was used to insure greater accuracy.

243. Four needles, belonging to this apparatus, are used alternately, and the polarity of them can easily be inverted with the help of two bar magnets; these needles are kept in two boxes, I. and II., the one end of the former is marked A I. and A II., while the other end bears the mark B, both of these marks being on one and the same side; whenever the marked side is facing the divided circle the position of the needle is called "Mark inside," while "Mark outside" signifies that the marked side faced the observer. Several different methods have been applied with the view of eliminating the error of inequality of the diameter of the axles and the non-accordance of the magnetic and the mechanical axis of the needle; in all methods, however, the following principles have been strictly adhered to:—

(1.) The instrument was carefully adjusted.

(2.) The observations were made "Mark inside" and "Mark outside."

(3.) The observations were made with the divided circle towards E. and towards W. (C.E. and C.W.) [It becomes necessary, however, to state here, that, strictly taken, this can only apply to observations in the meridian, and when out of the meridian it merely signifies that the two observations have been made in the same azimuth, the positions of the dipping circle being 180° different.]

(4.) Both ends of the needle have been read in parts of division (15 min.) and tenth and hundreth, and the mean taken.

(5.) The polarity of the needles has been inverted and an equal number of corresponding readings taken with A South and B South. [Particular care has been taken to change the magnetic moment of the needle as little as possible.]

244. Adhering to these principles the following different modes of observation have been applied:—

(A.) The dipping circle was placed in the magnetic meridian, which was determined either by a "declination" needle or by an "inclination" needle [when the needle is pointing perpendicularly, and in this latter case all different points enumerated in the foregoing paragraph have been strictly observed].

(B.) The magnetic meridian was carefully determined and a great number of observations was taken all round the compass, or only within several points to both sides of the meridian. The inclinations (I) observed in the magnetic azimuth (a) have been reduced to the meridian by the following formula:—

$$\text{Tang. } I = \text{tang. } I_0 \cos. a$$

(C.) The azimuths where chosen in equal intervals all round the circle, without regard to the magnetic meridian, and the reduction of the observed iuclination was effected by the following formula:—

$$\text{cotg.}^2 I = \frac{2}{n}(\text{cotg.}^2 I_0 + \text{cotg.}^2 I_1 + \ldots \text{cotg.}^2 I_{n-1})$$

245. I subjoin here different sets of observations, to explain more fully the modes of observing that I had adopted.

DETERMINATION OF THE MAGNETIC INCLINATION AT WILLIAMSTOWN, ON THE 30TH OF JANUARY, 1857.

NEEDLE A I., BOX I.

(Meridian ascertained with Declination needle and Inclination needle.)

B NORTH.

$9^{h.}$ $50^{m.}$ a.m. C.E. 22° 3·85 parts, "Mark outside;" 22° 2·5 parts, "Mark inside."
$9^{h.}$ $52^{m.}$ a.m. C.W. 337° 1·60 parts, "Mark outside;" 337° 2·0 parts, "Mark inside."

B SOUTH.

$10^{h.}$ $3^{m.}$ a.m. C.E. 22° 3·0 parts, "Mark outside;" 22° 1·0 parts, "Mark inside."
$10^{h.}$ $5^{m.}$ a.m. C.W. 337° 2·6 parts, "Mark outside;" 337° 0·8 parts, "Mark inside."

NOTE.—This observation on the dip of the needle was made three days after my arrival in the Colony (27th of January, 1857), and the place of observation was near the old lighthouse, on basaltic formation. Whenever the Inclinatorium was used in the open air it was mounted upon a tripod; while in the Absolute house it occupied the pillar described in the introductory remarks.

246. DETERMINATION OF THE MAGNETIC INCLINATION IN NORTH MELBOURNE (STANLEY STREET), ON THE 26TH OF FEBRUARY, 1857.

NEEDLE A I. BOX I.

(Meridian ascertained with Declination needle and Inclination needle.)

B SOUTH.

C.E. 22° 3·8 parts, "Mark inside;" 23° 0·3 parts, "Mark outside."
C.W. 336° 3·5 parts, "Mark inside;" 337° 1·1 parts, "Mark outside."

B NORTH.

C.E. 23° 1·1 parts, "Mark inside;" 22° 3·6 parts, "Mark outside."
C.W. 337° 2·5 parts, "Mark inside;" 337° 1·4 parts, "Mark outside."

247. ABSOLUTE MAGNETIC INCLINATION IN THE MAGNETIC MERIDIAN AND ROUND THE HORIZON, 1st APRIL, 1857.

(In the Yard of the University.)

Determination of the Magnetic Meridian ... ... { C. E. 185 26·50 / C. W. 5 25·50 }

NEEDLE A II. BOX I. SOUTH B.									NEEDLE A II. BOX I. SOUTH A.								
Azimuth Readings.		Running Number.	Time.	Readings of Vertical Circle.		Running Number.	Time.	Readings of Vertical Circle.		Running Number.	Time.	Readings of Vertical Circle.		Running Number.	Time.	Readings of Vertical Circle.	
° ′			A.M. h. m.	° ′			A.M. h. m.	° ′			A.M. h. m.	° ′			A.M. h. m.	° ′	
185 26·5	Mark outside.	570	9 1	336 2·45	Mark inside.	594	10 16	337 1·00	Mark outside.	618	11 1	336 3·00	Mark inside.	642	11 50	336 3·85	
5 25·0		571	...	22 3·25		595	...	23 0·75		619	...	23 1·25		643	...	22 2·90	
325		572	...	342 2·20		596	...	342 1·00		620	...	341 3·75		644	...	342 1·00	
325		573	...	17 2·65		597	...	18 0·50		621	...	17 0·90		645	...	17 3·75	
360		574	...	337 1·70		598	...	337 1·25		622	...	336 2·90		646	...	337 1·10	
360		575	...	22 3·00		599	...	22 3·85		623	...	22 2·15		647	...	22 3·85	
35		576	...	339 3·50		600	...	340 0·20		624	...	339 2·00		648	...	339 2·50	
35		577	...	19 3·25		601	...	20 1·50		625	...	20 1·35		649	...	20 1·85	
70		578	...	349 2·00		602	...	349 3·25		626	...	349 1·05		650	...	349 4·10	
70		579	...	9 3·35		603	...	10 1·75		627	...	9 4·30		651	...	10 3·50	
105		580	...	3 3·13		604	...	3 3·50		628	...	3 1·70		652	...	3 4·20	
105		581	...	355 2·50		605	...	356 1·70		629	...	356 3·25		653	...	356 1·25	
140		582	...	16 0·70		606	...	16 1·50		630	...	15 3·70		654	...	16 2·50	
140		583	...	343 0·25		607	...	343 3·00		631	...	343 0·10		655	...	343 1·75	
175		584	...	22 2·55		608	...	22 2·60		632	...	22 1·35		656	...	22 3·60	
175		585	...	337 0·25		609	...	337 2·35		633	...	337 0·00		657	...	337 2·00	
210		586	...	20 2·85		610	...	21 0·55		634	...	20 4·05		658	...	21 1·15	
210		587	...	338 2·75		611	...	339 0·25		635	...	338 2·00		659	...	339 0·00	
245		588	...	11 3·55		612	...	12 1·75		636	...	11 3·50		660	...	12 1·40	
245		589	...	346 3·90		613	...	348 0·65		637	...	347 1·10		661	...	348 0·25	
280		590	...	357 3·60		614	...	358 1·20		638	...	357 3·90		662	...	358 1·10	
280		591	...	1 0·50		615	...	1 3·50		639	...	1 0·70		663	...	1 3·00	
315		592	...	344 3·00		616	...	345 1·70		640	...	344 1·95		664	...	344 2·90	
315		593	...	14 1·75		617	...	15 0·70		641	...	14 3·28		665	12 45	15 0·60	

248. ABSOLUTE MAGNETIC INCLINATION (EQUAL INTERVALS), 4th APRIL, 1857.

(In the Yard of the University.)

NEEDLE A I. BOX I. SOUTH B.									NEEDLE A I. BOX I. SOUTH A.								
Azimuth Readings.		Running Number.	Time.	Readings of Vertical Circle.		Running Number.	Time.	Readings of Vertical Circle.		Running Number.	Time.	Readings of Vertical Circle.		Running Number.	Time.	Readings of Vertical Circle.	
°			A.m. h. m.	° ′				° ′				° ′				° ′	
305	Mark outside.	666	6 59	348 0·00	Mark inside.	678	...	347 3·35	Mark outside.	690	...	347 3·55	Mark inside.	702	...	348 1·00	
305		667	...	11 3·45		679	...	11 3·40		691	...	11 1·60		703	...	11 3·50	
5		668	...	337 1·20		680	...	336 3·50		692	...	336 3·10		704	...	337 0·15	
5		669	...	22 2·80		681	...	22 3·75		693	...	22 3·75		705	...	23 1·75	
65		670	...	348 0·10		682	...	348 0·55		694	...	347 3·50		706	...	348 1·35	
65		671	...	10 4·00		683	...	12 0·50		695	...	11 3·85		707	...	11 1·25	
125		672	...	11 3·60		684	...	11 3·80		696	...	11 2·95		708	...	11 1·50	
125		673	...	347 3·55		685	...	348 0·75		697	...	347 3·00		709	...	348 0·35	
185		674	...	22 4·00		686	...	22 3·90		698	...	22 3·25		710	...	23 1·50	
185		675	...	337 0·90		687	...	337 0·00		699	...	337 0·05		711	...	337 0·15	
245		676	...	11 4·00		688	...	11 3·85		700	...	11 2·30		712	...	11 1·40	
245		677	...	348 0·20		689	...	348 0·75		701	...	347 3·75		713	...	348 0·20	

249. ABSOLUTE MAGNETIC INCLINATION (IN OR NEAR THE MERIDIAN), 2ND SEPTEMBER, 1858.

(*Absolute House.*)

Determination of the Meridian ... ... 217° 48′

NEEDLE A I. BOX I. SOUTH A.										NEEDLE A I. BOX I. SOUTH B.									
Azimuth Readings.		Running Number.	Time.	Readings of Vertical Circle.	Circle.		Running Number.	Time.	Readings of Vertical Circle.	Circle.		Running Number.	Time.	Readings of Vertical Circle.	Circle.		Running Number.	Time.	Readings of Vertical Circle.	Circle.
° ′			A.M. h. m.	° ′				P.M. h. m.	° ′				P.M. h. m.	° ′				P.M. h. m.	° ′	
217 48	Mark outside	714	11 15	337 0·27	W.	Mark inside	736	2 24	337 1·58	W.	Mark outside	758	4 15	337 2·70	W.	Mark inside	780	5 5	337 0·60	W.
217 48		715	...	22 0·28	E.		737	...	22 1·19	E.		759	...	23 0·55	E.		781	...	22 1·80	E.
195		716	...	338 3·00	W.		738	...	338 3·00	W.		760	...	338 3·80	W.		782	...	338 2·30	W.
195		717	...	20 3·25	E.		739	...	20 3·60	E.		761	...	20 3·45	E.		783	...	21 0·55	E.
200		718	...	338 1·75	W.		740	...	338 1·75	W.		762	...	338 1·95	W.		784	...	338 0·35	W.
200		719	...	21 2·75	E.		741	...	21 2·60	E.		763	...	21 0·80	E.		785	...	21 2·55	E.
205		720	...	337 2·85	W.		742	...	337 2·25	W.		764	...	337 3·10	W.		786	...	337 2·25	W.
205		721	...	21 3·40	E.		743	...	21 3·80	E.		765	...	21 2·35	E.		787	...	21 3·70	E.
210		722	...	337 2·15	W.		744	...	337 1·40	W.		766	...	337 2·00	W.		788	...	337 1·60	W.
210		723	...	22 2·90	E.		745	...	22 2·25	E.		767	...	22 3·30	E.		789	...	22 0·90	E.
215		724	...	337 1·60	W.		746	...	337 1·80	W.		768	...	337 0·75	W.		790	...	337 0·30	W.
215		725	...	22 3·00	E.		747	...	22 2·65	E.		769	...	22 3·85	E.		791	...	22 1·75	E.
220		726	...	337 1·35	W.		748	...	337 1·95	W.		770	...	337 0·85	W.		792	...	337 1·00	W.
220		727	...	22 1·25	E.		749	...	22 2·30	E.		771	...	22 2·40	E.		793	...	22 3·15	E.
225		728	..	337 1·55	W.		750	...	337 1·85	W.		772	...	337 1·20	W.		794	...	337 2·25	W.
225		729	...	22 3·10	E.		751	...	22 3·00	E.		773	...	22 2·05	E.		795	...	22 2·70	E.
230		730	...	337 3·00	W.		752	...	337 2·50	W.		774	...	337 1·80	W.		796	...	337 3·25	W.
230		731	...	22 0·00	E.		753	...	21 3·70	E.		775	...	22 0·85	E.		797	...	22 1·75	E.
235		732	...	337 3·75	W.		754	...	338 1·95	W.		776	...	337 3·90	W.		798	...	338 0·80	W.
235		733	...	21 2·65	E.		755	...	21 3·20	E.		777	...	22 0·00	E.		799	...	22 0·80	E.
240		734	...	338 2·20	W.		756	...	338 3·60	W.		778	...	338 1·35	W.		800	...	338 1·75	W.
240		735	...	21 1·15	E.		757	...	21 1·10	E.		779	...	21 2·75	E.		801	...	20 3·70	E.

250. ABSOLUTE MAGNETIC INCLINATION (EQUAL INTERVALS), 3RD SEPTEMBER, 1858.

(*Absolute House*).

NEEDLE A I. BOX I. SOUTH B.										NEEDLE A I. BOX I. NORTH B.									
Azimuth Readings.		Running Number.	Time.	Readings of Vertical Circle.	Circle.		Running Number.	Time.	Readings of Vertical Circle.	Circle.		Running Number.	Time.	Readings of Vertical Circle.	Circle.		Running Number.	Time.	Readings of Vertical Circle.	Circle.
°			A.M. h. m.	° ′				A.M. h. m.	° ′				P.M. h. m.	° ′				P.M. h. m.	° ′	
220	Mark outside.	802	9 30	22 2·15	E.	Mark inside	826	11 10	22 2·95	E.	Mark outside	850	12 14	22 1·70	E.	Mark inside	874	3 0	22 1·65	E.
220		803	..	337 2·25	W.		827	...	337 1·20	W.		851	...	336 3·00	W.		875	...	337 0·55	W.
250		804	...	340 1·90	W.		828	...	340 1·15	W.		852	...	340 0·30	W.		876	...	340 2·65	W.
250		805	...	19 2·05	E.		829	...	19 3·00	E.		853	...	19 2·75	E.		877	...	19 3·35	E.
280		806	...	11 0·85	E.		830	...	11 0·75	E.		854	...	10 3·05	E.		878	...	11 0·35	E.
280		807	...	349 0·00	W.		831	...	348 2·65	W.		855	...	348 3·05	W.		879	...	349 0·45	W.
310		808	...	0 2·40	W.		832	...	0 2·00	W.		856	...	0 1·60	W.		880	...	0 1·90	W.
310		809	...	359 1·50	E.		833	...	359 1·10	E.		857	...	359 0·50	E.		881	...	359 1·20	E.
340		810	...	347 3·55	E.		834	...	347 1·75	E.		858	...	347 2·30	E.		882	...	347 2·55	E.
340		811	...	12 0·70	W.		835	...	11 3·80	W.		859	...	12 0·20	W.		883	...	12 0·55	W.
10		812	...	20 1·45	W.		836	...	20 1·40	W.		860	...	19 2·75	W.		884	...	20 0·30	W.
10		813	...	339 2·70	E.		837	...	339 2·00	E.		861	...	339 2·85	E.		885	...	339 3·90	E
40		814	...	337 0·45	E.		838	...	337 2·10	E.		862	...	337 0·90	E.		886	...	337 1·90	E.
40		815	...	22 2·40	W.		839	...	22 2·60	W.		863	...	22 2·35	W.		887	...	22 1·00	W
70		816	...	19 3·35	W.		840	...	19 2·10	W.		864	...	19 1·75	W.		888	...	19 2 85	W.
70		817	...	340 0·90	E.		841	...	340 1·80	E.		865	...	340 1·40	E.		889	...	340 2·15	E.
100		818	...	347 1·70	E.		842	...	348 2·80	E.		866	...	348 2·60	E.		890	...	349 0 35	E.
100		819	...	11 0·25	W.		843	...	10 3·75	W.		867	...	10 2·10	W.		891	...	10 3 70	W.
130		820	...	359 0·00	W.		844	...	358 3·90	W.		868	...	359 1·80	W.		892	...	359 1·00	W.
130		821	...	1 0·00	E.		845	...	0 2·90	E.		869	...	0 1·10	E.		893	...	0 1·00	E.
160		822	...	12 2·40	E.		846	...	12 0·50	E.		870	...	12 1·25	E.		894	...	12 0·25	E.
160		823	...	347 3·50	W.		847	...	347 2·00	W.		871	...	347 2·10	W.		895	...	347 3 25	W.
190		824	...	339 2·90	W.		848	...	339 1·00	W.		872	...	339 1·80	W.		896	...	339 3·35	W.
190		825	...	20 1·50	E.		849	...	20 2·00	E.		873	...	20 0·20	E.		897	...	20 0 50	E.

251. ABSOLUTE MAGNETIC INCLINATION (EQUAL INTERVALS), 9TH AND 12TH JANUARY, 1859.

(Absolute House.)

NEEDLE A II. BOX II. SOUTH B.										
Azimuth Readings.		Running Number.	Time.	Readings of Vertical Circle.	Circle.		Running Number.	Time.	Readings of Vertical Circle.	Circle.
			A.M. h. m.	° ′				A.M. h. m.	° ′	
10	Mark inside.	898	10 0	20 0·50	E.	Mark outside.	922	...	20 1·00	E.
10		899	...	340 1·25	W.		923	...	339 2·35	W.
40		900	...	336 2·70	W.		924	...	336 3·25	W.
40		901	...	22 3·00	E.		925	...	22 2·20	E.
70		902	...	19 2·20	E.		926	11 0	19 1·30	E.
70		903	...	341 1·05	W.		927	...	340 1·55	W.
100		904	...	349 0·70	W.		928	...	348 3·60	W.
100		905	...	11 0·50	E.		929	...	10 2·75	E.
130		906	...	359 1·50	E.		930	...	358 3·50	E.
130		907	...	0 3·00	W.		931	...	0 2·00	W.
160		908	...	12 2·20	W.		932	...	12 0·95	W.
160		909	...	347 3·00	E.		933	...	347 2·20	E.
190		910	...	340 1·35	E.		934	...	339 1·30	E.
190		911	10 43	20 0·95	W.		935	...	20 0·60	W.
220		912	...	22 3·00	W.		936	...	22 2·50	W.
220		913	...	336 2·00	E.		937	11 45	337 1·25	E.
250		914	...	340 3·25	E.		938	...	340 1·25	E.
250		915	...	19 0·50	W.		939	...	19 1·25	W.
280		916	...	10 3·00	W.		940	...	10 3·00	W.
280		917	...	349 0·50	E.		941	...	348 3·60	E.
310		918	...	0 3·00	E.		942	...	0 3·00	E.
310		919	...	359 2·70	W.		943	...	359 0·60	W.
340		920	...	347 3·30	W.		944	...	347 2·20	W.
340		921	...	12 1·65	E.		945	...	12 0·35	E.
On the 9th November.										

NEEDLE A II. BOX II. SOUTH A.										
		Running Number.	Time.	Readings of Vertical Circle.	Circle.		Number.	Time.	Readings of Vertical Circle.	Circle.
			A.M. h.	° ′				P.M. h. m.	° ′	
Mark outside.		946	...	19 3·75	E.	Mark inside.	970	...	20 2·00	E.
		947	...	339 2·75	W.		971	...	339 3·25	W.
		948	...	337 1·25	W.		972	...	337 1·70	W.
		949	...	22 1·60	E.		973	...	23 0·50	E.
		950	...	19 2·35	E.		974	...	19 3·60	E.
		951	...	340 1·20	W.		975	...	340 2·00	W.
		952	...	348 3·25	W.		976	...	348 3 90	W.
		953	...	10 3·55	E.		977	...	11 1·30	E.
		954	...	359 1·50	E.		978	...	359 0·00	E.
		955	...	0 2·60	W.		979	...	0 3·90	W.
		956	...	12 0·95	W.		980	...	12 2·65	W.
		957	...	347 2·70	E.		981	...	347 3·00	E.
		958	...	339 2·50	E.		982	...	339 3·50	E.
		959	...	20 0·30	W.		983	2 15	20 2·95	W.
		960	...	22 2·35	W.		984	3 p.m.	22 4·00	W.
		961	...	337 1·35	E.		985	...	337 1·60	E.
		962	...	340 0·85	E.		986	...	340 2·20	E.
		963	...	19 1·50	W.		987	...	19 3·70	W.
		964	...	10 3·25	W.		988	...	11 1·40	W.
		965	...	348 3·90	E.		989	...	348 3·60	E.
		966	11	0 1·60	E.		990	...	1 0·20	E.
		967	...	0 1·50	W.		991	...	359 2·00	W.
		968	...	347 2·55	W.		992	...	347 2·90	W.
		969	...	11 3·80	E.		993	...	12 2 25	E.
On the 12th November.										

252. The variation instrument for observing the inclination was frequently out of order during the first six months of the working of the Observatory, partly on account of the settling of the pillar whereupon the instrument was mounted, partly on account of the irregularities in the quantity of magnetism in the soft iron bars. For this reason a classification of the different results into periods of ten days was not deemed desirable, and I subjoin here instead of such mean values the values of the dip of the needle for the single days of observation.

On the 30*th of January,* 1857, Williamstown Old Lighthouse, 67° 23·7′ South.
On the 26*th of February,* 1857, North Melbourne, Stanley-street, 67° 6·8′ South.
Between the 1*st and* 4*th of April,* 1857, Yard of University, 67° 3·22′ South.
Between the 2*nd and* 3*rd of September,* 1858, Absolute House, 67° 18.09′ South.
Between the 9*th and* 12*th of January,* 1859, Absolute House, 67° 20·7′ South.

253. The number of days on which observations on the dip of the needle have been carried out would be considerably increased, if we take into consideration the results derived from observations with the Differential Inclinatorium of Lamont; but I avoid giving any observations here, as I shall have to publish them elsewhere suffice it therefore to mention some results, which are well calculated to illustrate the reliability of the instrument, and its high value for simplifying the methods for observing the Magnetic Inclination.

On the 4*th of April,* 1857, the inclination of the needle was observed with the Differential Inclinatorium. The angle of deflection, when reduced, was found to be 28° 58·05′.

On the 3*rd of November,* 1855, observations with Meyerstein's Inclinatorium at my Observatory, at Frankenthal, in the Palatinate, gave the inclination 66° 10·0′ North, and the Differential Inclinatorium gave an angle of deflection, when reduced, of 27° 36·85′.

Again, *on the* 23*rd of July,* 1856, when passing through Hamburg on my way to this colony, the inclination was observed to be (Meyerstein's instrument) 68° 25·31′ North, and an angle of deflection, when reduced, of 31° 9·9′. Combining these two results with the observations made on the 1st of April, 1857, in the yard of the University, we obtain a value for the inclination, as derived from Frankenthal, 67° 4·80′ South, and as derived from Hamburg, 67° 4·30′ South; the mean value of these, 67° 4·55′, differing only 1·33′ from the absolute results above given.

V.—HOURLY VARIATIONS.

254. As all the necessary remarks for the explanation of the arrangements, instruments, and modes of observation, with special regard to the hourly variations in the different elements of terrestrial magnetism have already been made in the introductory paragraph of this Report, it only remains to be observed, that the values of a part of division for the different instruments have been on several occasions carefully ascertained, viz., on the 9th of July, 1858, 5th, 6th, and 7th of January, 1859.

I avoid giving here the original observations thereon; suffice it to mention the values as computed from the different sets.

For the Declination Instrument.—Value of a part of division 0·803 minutes.

For the Horizontal Intensity Instrument.—Value of a part of division 0·000149 in parts of the total value.

For the Inclination Instrument.—Value of a part of division $0{\cdot}441' n'' + 0{\cdot}123' n'$ where n'' signifies the number of parts of division of the inclination instrument, and n' that of the intensity apparatus.

These values have been ascertained by taking the value of the torsion of the threads of suspension into consideration, and the angle of deflection was for intensity 50° 22,′ and for the inclination 47° 34.′

255. DECLINATION.

The following table (I.) contains the results, from hourly observations, on the variations in this element of Terrestrial Magnetism, during the ten months of observation, reduced to the minimum value in each month.

(I.) HOURLY VARIATIONS OF THE MAGNETIC DECLINATION FROM 1st MAY, 1858, TO 28th FEBRUARY, 1859.

MONTH.	Midnight.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midnight.	1 a.m.	2 a.m.
May	1·13	1·36	1·82	2·32	3·45	1·90	1·96	2·00	1·30	0·34	0·00	0·91	2·77	4·93	6·03	6·20	5·01	3·14	2·68	2·25	1·67	1·54	1·01	1·21	1·13	1·36	1·82
June	0·25	0·67	1·38	1·91	2·56	2·28	2·32	2·88	3·36	2·20	1·19	0·71	1·90	3·31	4·75	5·59	5·18	2·39	2·32	2·16	0·94	0·00	0·59	0·46	0·25	0·67	1·38
July	0·00	0·10	0·88	1·78	2·26	2·78	2·89	2·94	2·86	2·50	0·89	0·10	0·67	2·38	3·93	5·28	4·69	3·35	2·62	2·11	1·28	0·90	0·22	0·41	0·00	0·10	0·88
August	2·64	3·05	3·59	4·06	4·30	4·43	4·11	4·38	3·82	1·65	0·33	0·00	1·15	3·45	5·73	6·59	6·47	4·93	3·71	3·99	3·04	2·96	2·71	2·74	2·64	3·05	3·59
September ..	5·70	6·76	7·26	7·04	7·62	7·28	7·48	6·33	3·92	1·06	0·00	1·41	4·63	8·42	10·67	10·93	9·96	8·20	7·14	6·84	6·17	5·79	5·85	5·93	5·70	6·76	7·26
October	7·17	7·26	7·65	8·08	8·21	7·93	7·08	4·25	1·64	0·00	2·17	6·94	11·86	15·25	16·76	16·22	13·38	11·17	9·19	8·83	8·42	8·35	6·94	6·92	7·17	7·26	7·65
November ..	6·57	6·91	7·18	7·30	7·59	6·50	4·89	2·04	0·00	0·00	2·84	7·91	12·28	15·54	16·39	14·94	12·70	10·65	9·07	8·64	8·83	8·41	7·99	6·98	6·57	6·91	7·18
December ..	7·82	8·12	8·33	8·22	8·52	7·74	6·03	2·75	0·00	0·06	2·58	6·94	10·97	14·07	14·89	14·16	12·64	11·17	10·22	10·14	9·71	9·28	9·06	8·49	7·82	8·12	8·33
January	8·98	8·90	8·84	8·88	9·01	8·41	6·92	4·31	0·79	0·00	2·47	6·70	10·52	14·76	15·52	14·58	13·24	11·75	10·80	10·64	10·42	10·08	9·35	9·82	8·98	8·90	8·84
February ..	8·05	7·74	7·71	8·34	8·84	8·79	7·01	4·27	1·58	0·00	2·12	7·09	12·01	15·98	17·98	17·28	15·18	12·63	10·49	9·80	9·99	9·44	8·69	7·75	8·05	7·74	7·71

Table II. contains the means of the above values, for periods of 3 and 4 months, reduced to the minimum value for each period.

(II.) MEAN VALUES OF THE MAGNETIC DECLINATION FOR PERIODS OF 3 AND 4 MONTHS, REDUCED TO THE MINIMUM FOR EACH PERIOD.

PERIODS.	Midnight.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midnight.	1 a.m.	2 a.m.
May, June, and July	0·00	0·25	0·90	1·54	2·28	1·86	1·93	2·14	2·01	1·22	0·23	0·11	1·39	3·08	4·44	5·23	4·50	2·50	2·08	1·71	0·83	0·35	0·14	0·23	0·00	0·25	0·90
August, September, and October ..	1·31	1·86	2·33	2·56	2·88	2·71	2·39	1·15	0·29	0·07	0·66	1·95	3·67	5·21	6·22	6·41	5·09	3·27	2·85	2·72	2·04	1·87	1·33	1·36	1·31	1·86	2·33
November, December, January, February ..	7·84	7·90	8·00	8·17	8·47	7·84	6·19	3·32	0·57	0·00	2·48	7·14	11·43	15·07	16·18	15·22	13·42	11·53	10·13	9·79	9·72	9·28	8·75	8·24	7·84	7·90	8·00

(III.) The mean values of the Diurnal Oscillations, for 10 months of observation, are represented by the following figures, reduced to the minimum value.

PERIODS.	Midnight.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midnight.	1 a.m.	2 a.m.
Ten Months—from 1st May, 1858, to 28th February, 1859 ..	4·05	4·31	4·68	5·01	5·45	5·02	4·29	2·84	1·15	0·00	0·68	3·09	6·10	9·03	10·49	10·40	9·06	7·16	6·04	5·76	5·27	4·90	4·46	4·29	4·05	4·31	4·68

256. (IV.) HOURLY VARIATIONS OF THE HORIZONTAL INTENSITY FROM 1st MAY, 1858, TO 28th FEBRUARY, 1859.

MONTH.	Midnight.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	Noon.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midnight.	1 a m.	2 a.m.
May ..	3·69	4·03	4·17	4·40	4·82	4·76	4·79	5·55	5·69	5·00	3·66	2·42	1·59	0·65	0·00	0·61	1·42	1·40	3·09	3·29	1·94	2·89	3·07	4·62	3·69	4·03	4·17
June ..	2·46	2·67	3·03	3·56	4·14	4·26	4·05	4·13	5·44	5·33	4·75	3·24	2·84	1·93	1·04	1·51	1·34	2·61	2·77	1·22	0·00	0·26	1·00	2·23	2·46	2·67	3·03
July ..	1·23	1·39	1·93	1·86	2·36	2·74	3·36	3·54	4·44	4·35	4·03	3·21	2·09	1·01	0·00	1·08	2·00	1·71	1·67	0·79	0·76	1·13	0·60	0·52	1·23	1·39	1·93
August ..	4·52	4·32	5·05	5·27	5·50	5·75	6·68	7·60	8·08	7·66	6·24	4·05	1·96	1·00	0·00	1·24	3·23	3·63	3·11	3·31	3·18	2·84	3·14	3·39	4·52	4·32	5·05
September ..	8·18	8·51	8·34	8·40	9·28	8·98	9·60	9·70	9·19	6·15	3·36	1·07	0·00	0·29	1·82	3·53	4·49	5·59	5·93	6·29	5·90	7·00	7·39	8·15	8·18	8·51	8·34
October ..	8·11	7·96	8·39	9·26	9·21	9·71	9·97	9·02	6·73	3·27	0·39	0·00	1·47	3·56	6·80	7·87	6·72	7·49	6·56	6·51	7·87	7·40	6·82	7·16	8·11	7·96	8·39
November ..	7·54	7·84	8·48	8·35	8·41	8·91	8·72	7·62	4·43	1·61	0·00	0·32	3·64	7·10	9·44	10·86	10·09	9·11	8·67	7·80	7·48	7·80	8·05	8·08	7·54	7·84	8·48
December ..	9·69	10·47	10·64	10·70	11·17	11·53	11·15	9·87	7·07	4·08	0·00	1·67	4·26	6·33	8·52	9·65	10·04	9·66	10·04	9·54	9·79	10·70	10·58	10·36	9·69	10·47	10·64
January ..	10·35	10·74	11·04	11·49	11·64	11·84	12·53	11·49	8·67	4·64	2·38	0·00	1·08	5·39	7·80	10·63	12·35	12·65	11·29	10·94	11·38	11·61	11·18	11·05	10·35	10·74	11·04
February ..	10·89	10·63	10·59	11·45	12·41	12·43	12·62	11·57	8·78	4 78	1·89	0·00	1·66	4·49	6·08	8·50	10·25	10·00	10·77	11·34	11·66	11·32	11·43	11·16	10·89	10·63	10·59

(V.) MEAN VALUES OF THE HORIZONTAL INTENSITY FOR PERIODS OF 3 AND 4 MONTHS, REDUCED TO THE MINIMUM FOR EACH PERIOD.

PERIODS.	Midnight.	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m	Noon.	1 p.m.	2 p.m.	3 p.m.	4 p m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	Midnight.	1 a m.	2 a.m.
May, June, and July	2·11	2·35	2·70	2·93	3·43	3·57	3·72	4·06	4·84	4·55	3·80	2·61	1·83	0·85	0·00	0·72	1·24	1·56	2·16	1·43	0·55	1·08	1·21	2·11	2·11	2·35	2·70
August, September, and October ..	5·79	5·79	6·10	6·50	6·85	7·00	7·61	7·63	6·86	4·55	2·19	0·56	0·00	0·47	1·73	3·07	3·67	4·43	4·05	4·23	4·51	4·60	4·64	5·09	5·79	5·79	6·10
November, December, 1858; January, February, 1859 ..	9·12	9·42	9·69	10·00	10·41	10·68	10·75	9·64	6·74	3·28	0·57	0·00	2·16	5·33	7·46	9·41	10·18	9·86	9.69	9·41	9·58	9·86	9·81	9·66	9·12	9·42	9·69

(VI.) FOR TEN MONTHS.

PERIODS.	Midnight.	1 a.m.	2 a m.	3 a.m.	4 a.m.	5 a.m.	6 a.m.	7 a.m.	8 a m.	9 a.m.	10 a.m.	11 a m.	Noon.	1 p.m	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p m.	9 p.m.	10 p.m.	11 p.m.	Midnight.	1 a.m.	2 a.m.
Ten Months—from 1st May, 1858, to 28th February, 1859 ..	5·06	5·25	5·56	5·87	6·29	6·49	6·74	6·41	5·25	3·08	1·07	0·00	0·46	1·57	2·55	3·95	4·59	4·78	4·79	4·50	4·40	4·69	4·72	5·07	5·06	5·25	5·56

Note.—The values in Tables I. to VI. are given in parts of division of the scale, the values of which were stated in section 200.

257. The instrument for ascertaining the hourly variations in the Magnetic Inclination, was occasionally out of working order, on account of the unsettled state of the pillars upon which the same was placed, and it was thought advisable not to include in the present Report any results of observations made with this instrument, the time of observation being too short. It was considered the more advisable to do so, as the original observations will be printed in full.

VI.—AURORA AUSTRALIS AND MAGNETIC STORMS.

258. For the development of the theory of Terrestrial Magnetism, nothing can be of greater importance than the study of the disturbances in the elements of our earth's magnetism, which take place so suddenly and apparently without regularity. A complete calendar of these Magnetic Storms, together with the circumstances under which they occurred, will therefore be a valuable addition to this Report.

259. All possible attention was paid to the phenomenon of Polar Lights, so intimately connected with magnetic storms, and no opportunity was lost to establish the fact of their display whenever the magnetic elements showed irregularities. In this object the labors at the Observatory have been greatly assisted by the logs of experienced masters of ships, which contained observations made in higher latitudes with reference to this matter.

260. The recognition of an Auroral Light, when there are but faint traces visible, or in case the moonlight interferes with the observations, is in latitudes like ours a matter of considerable difficulty, and requires practice and care. The best criterion for distinguishing an Auroral Light is offered by the oscillating motion of the luminosity in a horizontal direction near the S.E. and S.W. horizon—that is, if the luminosity of the sky moves between several points of the compass, and if this oscillating motion continues while the phenomenon is visible, one may always be sure to have to do with an auroral discharge, even if no scintillation could be observed.

261. The cirro stratus veil so frequently spreading over the sky in this country is but too apt to deceive an inexperienced observer, particularly so if the sky should be illuminated by the light of the moon and stars, but the mode of observation above referred to will at once determine what is to be thought of this kind of luminosity.

262. It was thought advisable to enumerate also some displays of Aurora Australis which had been carefully observed previous to the time when the systematical registrations at the Observatory commenced, and further to add to this list as many other simultaneous occurrences in this direction as could possibly be established.

263. *January the* 17*th*, 1857, Lat. 51° 8′ S., Long. 111° E.—Extract from the log of the ship *La Rochelle.*—Throughout the evening a splendid Aurora Australis was visible, most vivid streamers of light constantly playing on the southern horizon; the greatest brilliancy of the phenomenon was at midnight, when a wide arc extended over the sky from W. to S. by E. per compass; the motion of the arc was about 35°; the streamers reached at times an altitude of 60°; shortly after sunset the dullness of the stars of first magnitude was remarkable, so much so, that while the horizon was apparently quite strongly defined, altitudes of α and β Centauri and Venus could not be measured with any degree of accuracy, although two observers were engaged in doing so.

264. *January the* 19*th*, 1857, Lat. 49° 15′ S., Long. 118° E.—Extract from the log of the ship *La Rochelle.*—Frequent streamers of light emanating from the south, and continuing for several hours throughout the evening, although with by far less brilliancy than on the former occasion.

265. *December the* 17*th*, 1857, South Yarra, near Melbourne.—At $8^{h.}$ $50^{m.}$ p.m. the first traces of an Aurora Australis was seen—an arc extended from S. E. by S. to S.W. by W., rising to an altitude of 12° in the Magnetic South. The first streamers appeared in S.S.E., and gradually extended towards S.W., attaining at $9^{h.}$ $20^{m.}$ a considerable brilliancy, when the S.W. horizon was covered with red streamers, reaching as high as Fomalhaut. The red color of the streamers was almost entirely confined to the western part of the phenomenon. At $9^{h.}$ $40^{m.}$ the luminosity again moved towards E., and reached its greatest amplitude in S.E. by S. The streamers attained an altitude of 75° when emanating in the astronomical meridian, and the smaller Magellan cloud could not be distinguished when the streamers passed it, while the larger one, though visible, appeared to be greatly reduced in size. At $9^{h.}$ $50^{m.}$ the phenomenon took up the whole portion of the horizon between S.E. by S. and S.W. by W., and the scintillations of the streamers were then most beautiful. About 15° above the horizon a column of red light appeared in S.S.W., which was enclosed between two parallel streamers, and remained so for a considerable time. Numerous cirro cum. clouds were now scattered over the southern horizon, and at $10^{h.}$ $5^{m.}$ a

similar column of red light as above described made its appearance in W.S.W. 30° above the horizon; at $10^{h.}$ $30^{m.}$ the phenomenon was brightest in S.S.W. though much decreased in brilliancy, and at $11^{h.}$ the display of streamers was almost entirely confined to the magnetic meridian; although the Auroral Light became at times very weak, the coruscation of streamers became very great at midnight, occupying at that time more the eastern horizon; the phenomenon continued to play with more or less brightness during a few hours of the morning of the 18th; it is a fact worthy of notice, that the cirro cum. clouds disappeared more and more as the phenomenon extended over a greater portion of the horizon.

266. *April the 10th*, 1858.—Splendid Aurora Australis at $3^{h.}$ a.m. I give below the description of this phenomenon, as published by me in the daily papers of the 20th of April, 1858.—Until $2^{h.}$ $30^{m.}$ on the morning of the 10th, the whole of the sky was overcast with dense clouds, and the temperature of the air was moderate; at about that time the clouds began to clear away from the E. and N.E., and the temperature rapidly to sink; at $5^{h.}$ the thermometer stood at 45·5° F.; nothing particular was observed in the southern part of the sky until the time of the 3 o'clock registration, when the first rays of an Aurora became visible on the S.W. horizon; in a few minutes the whole of the southern sky from S.S.E. to W.S.W. was filled with a most brilliant display of this phenomenon; the most remarkable portions were those in the W.S.W. and the magnetic south, in the former to nearly as high as Algorab, or about 35°; the whole of the heavens appeared of a beautiful pink color, and remained so almost for the duration of the phenomenon; in the latter a column of light ascended from the horizon at an angle of 75°, passing through the constellation of Argus between δ and β, reaching an altitude of 20°; this column was in the form of a parallelogram of considerable breadth, and was distinctly defined on its upper extremity by a line parallel to the horizon; for about 15 minutes it retained almost its original form, during which time brilliant scintillations continued to shoot up in a most beautiful manner, the streamers however rarely exceeding 30° in altitude and only extending their play from S. 22° E., to S. 86° W.; the pink color of the rays was nearly all confined to the western portion of the phenomenon; whenever a pause occurred, the luminous action always commenced in the west and extended gradually towards the east; during the whole of the occurrence—continuous observations having been made on the magnetic instruments—great disturbances were perceived in all the three elements of terrestial magnetism; during the display the electrical tension was frequently observed, and nothing extraordinary perceived; the tension was found to be 3·00 positive according to the electrometer of M. Quetelet; towards the end of the phenomenon a great number of cirrous clouds were scattered over the sky, and a very light vaporous cloud in the upper region of the atmosphere was slowly moving towards S., gradually increasing its extension.

The following table contains the observations made with the Declinometer throughout the display. Intensity and Inclination showed similar disturbances; but the instruments not being completely in working order, were not registered so minutely.

Value of a Part of Division ... ... 0·803 minutes.

Time.	Reading of the Declination Instrument.	Time.	Reading of the Declination Instrument.	Time.	Reading of the Declination Instrument.
A.M. h. m.		A.M. h. m.		A.M. h. m.	
4 25	33·5	5 13	22·0	6 7	33·3
30	22·0	23	26·0	8	31·8
36	4·2	26	29·0	10	32·2
38	8·2	30	32·8	11	30·4
40	0·0	32	35·2	12	30·0
42	1·3	36	34·5	33	32·4
45	9·8	43	36·0	37	33·0
48	14·0	44	35·0	38	34·0
51	17·8	45	35·7	39	34·0
56	26·0	46	35·8	7 9	35·3
5 4	29·0	47	35·5	20	34·2
9	24·0	48	35·1	9 0	28·7
12	21·8	50	34·7	...	...

Note.—The minimum value was adopted as Zero, and this remark applies to all the following disturbance observations in any of the three elements.

The last ray, which was of considerable altitude, rose at $5^{h.}$ $30^{m.}$, presenting the form of a very acute pyramid. After this, all that remained was a wide arch of light a few degrees above the horizon, extending within the before-named limits and having a dark belt at its outer boundary. The undulations of this arch gradually died away as the day broke, and totally disappeared when the sun rose above a clear horizon.

267. *May the 8th*, 1858.—On the morning of this day irregularities in the readings of the magnetic instruments made themselves manifest, which assumed a more serious character towards noon, and at 1h. 30m. p.m. the disturbance observations were commenced.

VALUES OF THE PARTS OF DIVISION { Declination ... ... 0·803′ (min.)
Intensity ... ... 0·000149 (in parts of the intensity)
Inclination ... ... 0·441′ n'' + 0·123′ n' (min.)*

TIME.	DECLINATION.	H. INTENSITY.	INCLINATION.	TIME.	DECLINATION.	H. INTENSITY.	INCLINATION.	TIME.	DECLINATION.	H. INTENSITY.	INCLINATION.
P.M. h. m.				P.M. h. m.				P.M. h. m.			
1 30	37·6	20·1	14·5	2 42	37·6	21·1	14·4	4 42	35·1	18·6	18·4
33	36·9	19·7	19·1	44	37·2	19·1	13·0	44	34·0	18·4	17·9
36	36·0	17·9	14·7	46	36·1	17·6	11·9	46	33·7	18·2	17·3
37	37·1	18·8	13·6	50	35·0	17·5	12·0	54	34·0	18·6	18·0
39	37·3	19·1	14·1	52	35·0	18·5	12·8	56	34·0	18·4	17·6
40	37·6	19·3	14·1	54	35·9	19·6	13·6	58	34·0	17·5	17·2
42	37·6	19·3	13·7	56	35·6	20·0	13·7	5 4	34·0	16·7	17·0
43	37·6	20·1	14·2	57·5	Oscillating very rapidly.			8	34·1	16·6	16·9
45·5	37·6	20·4	14·5	59·5	37·0	20·5	...	6 17	31·7	19·9	20·4
46·5	37·9	20·7	14·9	3 1	37·5	20·0	13 7	19·5	31·7	20·5	20·9
48	38·4	20·9	15·1	4	37·4	18·9	13·7	33	33·8	14·9	15·1
49	38·3	20·2	14·0	7	38·1	19·6	13·9	45	32·3	14·0	15·4
50	37·7	19·9	14·1	9	39·0	19·5	14·1	53	30·6	12·1	13·6
50·5	37·8	20·2	14·4	10	40·0	19·0	14·0	7 26	23·0	7·4	8·0
52	37·9	19·8	14·1	18	40·5	17·0	12·6	29	21·3	5·3	5·7
54	38·6	20·25	14·5	20	40·7	16·9	12·3	30	19·4	4·9	5·7
54·5	38·75	20·8	14·25	24	40·9	16·1	11·7	33	16·4	1·2	4·2
55·5	39·1	20·6	14·6	28	41·1	15·6	11·9	34	15 0	1·0	1·8
56	39·6	20·1	14·4	30	41·0	15·5	11·2	36	13·0	1·3	0 0
57	39·9	20·1	14·1	32	40·0	14·5	11·0	37	8·5	0·0	1·0
57·5	39·8	19·5	13·4	34	39·0	13·5	11·1	37·5	8·0	0·5	0·5
58	40·7	19·9	12·3	36	38·9	13·4	10·1	39	6 0	0 2	0·0
2 0	40·7	19·5	11·6	38	38·1	13·5	9·9	40	4·0	1·0	0·3
2	39·8	17·4	11·4	42	37·1	13·4	10·0	41	3·3	1·5	1·1
4	38·7	15·3	9·8	46	35·4	13 8	10·7	41·5	2·3	2·3	1·4
14	35·2	12·7	7·8	49	35·1	14·6	12·0	42·5	1·0	4·0	2·7
16	34·0	13·4	8·0	52	35·0	15·5	13·0	43·5	0·0	5·5	3·7
20	34·0	15·5	10·0	56	34·6	16·1	13·5	8 16	20·5	23·0	21·5
22	34·0	18·0	12·0	4 5	34·2	17·7	14·3	18	21·4	21·6	20·6
24	33·0	18·5	13·0	12	34·0	18·4	15·0	20	22·0	21·1	20·3
28	34·0	23·5	17·0	20	32·9	19·4	17·1	37	27·5	20·1	19·7
30	35·0	24·5	17·0	25	32·1	20·6	18·9	57	27·7	23·2	21·6
34	34·0	22·0	19·3	30	33·8	22·4	20·2	12 25	28·8	25·1	22·5
36	36·3	22·8	16·4	34	34·5	22·0	20·5				
38	36·8	21·5	15·2	38	35·0	20·5	20·0				

* n' signifies the parts of Division of the Intensity, and n'' those of Inclination.

268. *May the 12th*, 1858.—The magnets were slightly disturbed between 11h. a.m. and noon.

VALUES OF THE PARTS OF DIVISION { Declination ... ... 0·803′ (min.)
Intensity ... ... 0·000149 (in parts of the intensity)
Inclination ... ... 0·441′ n'' + 0·123′ n' (min.)

TIME.	DECLINATION.	H. INTENSITY.	INCLINATION.
A.M. h. m.			
11 3	0·0	1·9	0·0
29	1·4	1·2	6·4
31	1·2	0·7	6·5
33	1·4	0·6	6·5
35	2·1	0·4	5·8
37	2·0	0·2	5·8
39	2·2	0·0	5·6
41	2·2	0·4	5·6

At Callao severe shocks of an earthquake were felt on the 11th of May (12th of May, Melbourne time).

269. *May the 24th and 25th.*—Great irregularities in the horizontal intensity, at $9^{h.}$ a.m., on the 24th, which continued until $5^{h.}$ a.m., on the 25th, when this element assumed again a more normal character. At $6^{h.}$ $30^{m.}$ p.m., on the 24th, several shocks of an earthquake were felt at Mayence, on the Rhine. (Melbourne mean time $3^{h.}$ $41^{m.}$ a.m., on the 25th.)

270. *June the 5th.*—At $1^{h.}$ a.m., traces of an Aurora Australis became visible, and at $2^{h.}$ $25^{m.}$ the whole horizon, from S. by E. to W., was illuminated by the phenomenon. Cirro Cum. clouds were scattered over the whole southern sky. The brightest part of the phenomenon was at $3^{h.}$ $6^{m.}$ in the azimuth of α Crucis; at $3^{h.}$ $17^{m.}$ in that of η Argûs; and at $5^{h.}$ $15^{m.}$ in the azimuth of α Centauri. The Southern Light was distinctly visible towards west at $6^{h.}$ $10^{m.}$, notwithstanding the brightness of the Crepuscular arc. There were slight oscillations observed in the magnetic elements, as can be seen from the following tables:—

Values of the Parts of Division { Declination ... ... 0·803′ (min.) / Intensity ... ... 0·000149 (in parts of the intensity) / Inclination ... ... 0·441′ n'' + 0·123′ n' (min.)

Time.	Declination.	H. Intensity.	Inclination.	Time.	Declination.	H. Intensity.	Inclination.
A.M. h. m.				A.M. h. m.			
2 18	9·7	0·1	0·4	2 53	5·0	5·2	3·7
19	9·5	0·1	0·0	54	4·7	5·5	3·8
20	9·1	0·0	0·3	55	4·1	6·0	4·2
23	8·7	0·5	0·1	3 0	2·1	6·7	4·8
25	8·3	0·6	0·7	16	1·6	9·9	7·7
26	8·5	1·0	0·6	33	0·0	12·3	9·6
47	7·6	4·7	3·2	55	3·1	11·9	9·8
48	6·9	4·6	3·5	4 25	0·7	10 8	8·5
50	6·5	4.9	3·2	5 38	4·3	5·6	3·8
52	5·7	5·0	3·7	7 31	4·7	3·4	2·8

271. *June the 19th.*—Slight disturbances and of short duration in the magnetic elements between $3^{h.}$ and $4^{h.}$ p.m.

272. *June the 23rd.*—Distinct traces of the Southern Light were seen on the S.W. horizon, at $9^{h.}$ p.m.; the greatest luminousness was observed in S. and S.S.E. after $10^{h.}$ p.m., but it soon faded away.

Captain Clark, of the *Marco Polo*, does not make mention of the Aurora in his ship's log; he was then in lat. 42° S. and 94° E., and the sky was pretty clear. From $6^{h.}$ p.m. the magnetic elements were slightly disturbed.

273. *June the 24th.*—After midnight the above mentioned slight disturbances continued, intensity and inclination being chiefly affected. This lasted throughout the day, and at $7^{h.}$ p.m. the horizontal intensity reached its lowest value. The following table shows the principal features of the disturbances on this day:—

Values of the Parts of Division { Declination ... ... 0·803′ (min.) / Intensity ... ... 0·000149 (in parts of the intensity) / Inclination ... ... 0·441′ n'' + 0·123′ n' (min.)

Time.	Declination.	H. Intensity.	Inclination.	Time.	Declination.	H. Intensity.	Inclination.
A.M. h. m.				P.M. h. m.			
12 45	9·0	19·5	16·5	4 50	20·0	11·3	5·5
1 30	10·0	16·2	13·8	52	19·0	11·0	6·5
45	13·1	37·4	31·4	54	19·0	11·3	5·5
53	13·0	39·3	36·5	5 4	18·0	11·3	5·6
2 30	0·0	23·3	19·5	8	18·0	11·8	6·5
3 20	15·0	28·1	15·5	12	20·5	14·7	7·0
P.M.							
4 5	26·0	6·3	3·1	16	22·8	12·1	6·8
10	19·0	7·3	2·3	20	24·0	11·3	6·5
15	14·0	9·3	5·5	25	23·5	8·8	4·0
20	14·0	16·3	11·5	30	22·0	9·8	5·5
25	17·0	17·3	11·5	6 0	23·0	8·2	6·8
30	18·0	16·2	...	7 0	19·0	0·0	0·0
48	20·2	21·0	7·5	8 0	14·0	7·3	8·5

At $7^{h.}$ $30^{m.}$ p.m., a smart shock of an earthquake was felt on the Terrick Terrick, near the Murray.

274. *June the 25th.*—At $10^{h.}$ a.m., magnets disturbed, chiefly H. intensity. These disturbances lasted until noon, when the magnetic elements returned to a more normal state.

275. *June the 30th.*—At $9^{h.}$ $31^{m.}$ p.m., slight oscillations in the magnetic elements, continuing during the rest of the evening.

276. *July the 3rd.*—Luminousness about the S.W. horizon at $2^{h.}$ a.m., and although the moon was shining very brightly, the silver arc of an Aurora Australis could be seen. It was, however, not higher than 5° or 8°, and shifted constantly between S.S.W. and S.S.E. At $2^{h.}$ $30^{m.}$ the magnets were slightly disturbed.

277. *July the 4th.*—Slight oscillations in the magnets between $10^{h.}$ and $11^{h.}$ p.m.

278. *July the 30th.*—Slight oscillations in the magnets between the hours of $2^{h.}$ p.m. and midnight.

279. *August the 18th.*—After the moon had set there was a bright light perceptible almost due north, equal in intensity to the Zodiacal Light when distinctly visible. There was no veil on that portion of the horizon and it appeared quite free of clouds. Might it have been caused by an Aurora Borealis? The magnetic elements, however, were very quiet.

280. *August the 21st.*—Throughout the day the magnets were subject to more or less serious disturbances; the inclination particularly underwent a most rapid and sudden change at $8^{h.}$ p.m., as will seen by the following table:—

Values of the Parts of Division { Declination ... ... 0·803′ (min.) / Intensity ... ... 0·000149 (in parts of the intensity) / Inclination ... ... 0·441′ n'' + 0·123′ n' (min.)

Time.	Declination.	H. Intensity.	Inclination.
P.M. h.			
6	11·7	8·7	16·4
7	13·9	5·2	14·1
8	0·0	0·0	0·0
9	6·4	2·8	11·1
10	5·7	1·2	10·6
11	8·7	3·7	12·4
Midnight	6·3	6·7	14·6

From $8^{h.}$ $35^{m.}$ p.m. on the 21st until $3^{h.}$ $21^{m.}$ a.m. on the 22nd the magnetic instruments were registered every two minutes, but the oscillations in the readings were comparatively small. At $10^{h.}$ $15^{m.}$ p.m. on the 21st an earthquake occurred in Tanunda, South Australia, ($10^{h.}$ $45^{m.}$ Melbourne mean time), and according to the *South Australian Register*, shocks of an earthquake were felt on the 21st and 22nd of August in Angaston, South Australia. Throughout the day a furious gale of wind swept the Southern, Indian, and Pacific Oceans, and Torres Straits, as may be seen from the following reports:—

Ship *Ariel*, 163° 20′ E., 37° 37′ S.—$6^{h.}$ $48^{m.}$ a.m. furious gale from W.S.W., barometer fallen to 29·39 inch; and at $10^{h.}$ $48^{m.}$ p.m. (Melbourne mean time), heavy squalls, with lightning and rain.

Ship *Caroline*, 37° 13′ S., 150° 49′ E.—$10^{h.}$ p.m. (Melbourne mean time), heavy gale from W.S.W.

Ship *Johanna Wagner*.—Cape Otway. Heavy gale from W.S.W. at $1^{h.}$ a.m., and at $5^{h.}$ a.m. from N.W. (Melbourne mean time).

Ship *Douglas Castle*, 98° 4′ E., 42° 23′ S.:—

(Melb. mean time.)

At noon a most furious gale from W.N.W.; barometer 29·18 inch.; temperature 41·5°
At $8^{h.}$ p.m. „ „ W.N.W.; „ 29·11 „ „ 42·0
At $6^{h.}$ p.m. wind decreasing W.N.W.; „ 29·08 „ „ 41·0
At $9^{h.}$ p.m. „ W.N.W.; „ 29·77 „ „ 42·0
At $11^{h.}$ p.m. heavy squalls from S.W., accompanied with hail.

281. *August the 26th.*—Between $2^{h.}$ and $3^{h.}$ p.m. oscillations in the magnets.

282. *August the 28th.*—Between $2^{h.}$ and $3^{h.}$ p.m. magnets disturbed. During a heavy thunderstorm, at midnight, the reading of the horizontal intensity suddenly increased and decreased again.

On the 27th, $11^{h.}$ p.m., declination 45·8; intensity 1·8
On the 28th, midnight, „ 41·4; „ 9·4
„ $1^{h.}$ a.m. „ 47·0; „ 3·0

283. *August the 29th.*—Very slight oscillations in the magnetic elements between $9^{h.}$ $28^{m.}$ and $10^{h.}$ a.m.

284. *August the 30th.*—Slight oscillations in the magnets between $1^{h.}$ and $2^{h.}$ p.m.; and also

285. *August the 31st.*, between $3^{h.}$ and $4^{h.}$ a.m.

286. *September the 1st.*—Slight irregularities in the magnetic readings between noon and $1^{h.}$ $20^{m.}$ p.m.

287. Between $5^{h.}$ and $7^{h.}$ p.m. on *September the 19th* the magnetic elements showed slight disturbances.

288. *September the 20th.*—The magnets greatly disturbed. At $10^{h.}$ p.m. a fine Aurora Australis became visible; notwithstanding the great brightness of the moon (then culminating) the streamers could be distinctly seen. The sky was at times illuminated from S.W. to S.S.E. by the display of the Aurora Australis. At $10^{h.}$ $30^{m.}$ small cumuli clouds spread over the sky, which soon became entirely overcast.

The following table shows the values of the different elements of terrestrial magnetism, as observed at short intervals during the display of the Southern Light.

Values of the Parts of Division { Declination ... ... 0·803′ (min.)
Intensity ... ... 0·000149 (in parts of the intensity)
Inclination ... ... 0·441′ n'' + 0·123′ n' (min.)

Time.	Declination.	H. Intensity.	Inclination.	Time.	Declination.	H. Intensity.	Inclination.
P.M. h. m.				P.M. h. m.			
8 12	14·0	8·0	0·4	9 36	8·8	19·5	14·6
15	14·0	7·7	0·2	39	9·0	18·9	10·7
19	13·4	8·6	0·0	41	9·5	18·7	10·8
21	13·0	8·7	0·5	42	10·2	19·0	11·0
22	12·7	9·1	0·9	43	11·9	19·7	10·2
23	12·8	9·3	1·5	45	11·6	18·4	10·7
40	6·5	0·0	8·9	46	12·0	18·1	10·6
47	6·0	18·7	9·4	46 5	12·2	17·7	10·3
51	6·0	17·7	6·6	48	12·3	16·8	9·9
53	4·7	16·7	6·0	49	12·3	15·2	7·4
54	3·1	17·8	6·8	52	12·0	14·4	6·9
9 5	0·1	23·7	11·9	53	11·9	14·0	7·1
9	0·0	24·2	12·4	54	11·7	13·7	6·3
10	0·0	24·6	13·1	10 8	13·0	14·7	7·6
12	0·1	24·8	13·8	34	17·5	15·9	8·7
13	0·7	25·4	14·2	36	17·4	16·1	8·9
15	1·1	25·2	14·9	37	17·4	16·2	9·2
18	2·1	25·4	15·1	11 15	16·8	19·3	10·7
20	3·1	25·7	15·3				
21	4·0	24·7	15·3				

289. *September the 21st.*—Between $9^{h.}$ and $10^{h.}$ a.m., slight disturbances in the magnets; and at 8 $30^{m.}$ p.m., traces of a Southern Light. The brightest part, towards $9^{h.}$, was in S.W. by W., but it moved between W. and S.S.E., and at $9^{h.}$ $45^{m.}$ the greatest brightness was perceptible, in S.S.E., and even a slight tint of pink could be recognised; close to the horizon was a double bank of mist. The magnets continued to be disturbed, although very slightly. This was followed by a most furious gale from the North, during the 22nd of September.

290. On the evening of the 24*th* and the morning of the 25*th* of *September*, the magnetic elements showed disturbances similar to such as are caused by an Auroral Light.

291. *October the 7th.*—From $1^{h.}\ 15^{m.}$ to $3^{h.}\ 30^{m.}$ a.m., an Aurora Australis was seen moving from S.W. by S. towards S.S.E., and even as far as E. The pink streamers were predominating in the south-eastern portion of the sky. The magnetic elements showed considerable disturbances during the night, as well as between $10^{h.}$ a.m. and noon, at which time the south-eastern horizon showed a remarkable brightness in the form of an arc, resembling the silver arc of an Aurora Australis.

292. *October the 28th.*—Considerable disturbances were registered on the morning, between $10^{h.}$ and noon, and throughout the whole day the intensity was rather low.

293. *November the 14th.*—Between midnight and $3^{h.}$ a.m., the magnetic elements were disturbed, the horizontal intensity being chiefly affected.

At $1^{h.}\ 45^{m.}$ a.m. on the *15th of November*, 1858, shocks of an earthquake were reported to have been felt at Krems, in Austria, ($10^{h.}\ 29^{m.}$ a.m. Melbourne mean time).

On the *26th of November*, 1858, two severe shocks of an earthquake were felt in San Francisco, at $12^{h.}\ 34^{m.}$ a.m., ($6^{h.}\ 24^{m.}$ p.m. Melbourne mean time).

294. *December the 5th*, 1858.—Early in the morning, between $2^{h.}$ and $4^{h.}$, an Aurora Australis was observed in Geelong, Sandhurst, and Port Albert. Captain Meyer, of the ship *Cesar and Helene*, being then in lon. 159° E., and lat. 48° 13′ S., reports this phenomenon as having been exceedingly bright. Professor Heiss, of Munster, had the kindness to communicate to me the fact, that an unusually fine Aurora Borealis had been observed, between $9^{h.}$ and $12^{h.}$ p.m., on the 4th of December, ($6^{h.}$ to $9^{h.}$ a.m. on the 5th, Melbourne mean time). The magnetic elements were disturbed throughout the morning, and continued to be so for the remainder of the day; but the nature of the disturbances appeared to indicate a periodical alteration in the values of the elements of terrestrial magnetism rather than sudden changes.

295. *December the 23rd*, 1858.—At $9^{h.}\ 38^{m.}$ p.m., before the rise of the moon, distinct traces of an Aurora Australis were seen in S.W. by S., oscillating towards E. and back again to S.W. by S. The magnetic elements disturbed between $10^{h.}\ 5^{m.}$ and $11^{h.}$ p.m.

296. *December the 25th*, 1858.—An Aurora Australis visible between $1^{h.}$ and $3^{h.}$ a.m.; the brightness of the sky extended from S. by E. to S.W., and at $1^{h.}\ 22^{m.}$ a fine broad streamer rose from the south to an altitude of 20° and 25°; this streamer soon afterwards appeared divided into two streamers, which after two or three minutes totally disappeared; shortly after $2^{h.}$ a.m. the phenomenon rapidly declined; the magnetic elements showed considerable and rapid changes, as will be seen from the following table:—

Values of the Parts of Division { Declination ... ... 0·803′ (min.) / Intensity ... ... 0·000149 (in parts of the intensity) / Inclination ... ... $0{\cdot}441'\ n'' + 0{\cdot}123'\ n'$ (min.)

Time.	Declination.	H. Intensity.	Inclination.	Time.	Declination.	H. Intensity.	Inclination.
A.M. h. m.				A.M. h. m.			
12 0	4·8	0·0	29·9	1 22	24·1	15·3	25·5
34	5·8	10·1	12·4	30	27·7	6·4	19·5
36	5·5	19·7	11·3	31	26·7	6·0	17·2
38	5·1	18 8	9·8	32	25·1	6·3	16 6
40	4·8	18·0	9·5	33	23·9	5·9	15·2
42	3·9	18·2	8·7	35	22·1	6·2	14·4
44	1·7	17·9	6·9	36	20·3	6·5	13·6
48	0·1	17·8	7·8	37	19·1	7·4	12·8
50	0·0	18·3	8·6	38	17·4	7·7	13·0
53	0·2	17·9	9·7	45	9·2	15·4	13·8
1 13	13·3	5·0	16·0	47	8·3	16·4	14·6
15	18·2	9·5	18·5	49	8·1	16·6	14·5
16	19·9	12·1	19·8	51	8·0	16·1	14·0
17	20·8	14·0	22·1	54	7·2	15·1	13·8
18	22·1	14 8	23·8	2 0	10·8	4·9	6·9
1 0	10·1	5·2	8·4	3 0	14·9	1·2	0·0

297. *January the 16th*, 1859.—Soon after midnight the magnetic elements showed considerable disturbances, which increased towards 2h. a.m.; at 2h. 35m. the needle of the inclination made a tremulous motion in a vertical sense, and by 4h. a.m., the magnets returned to a more normal state, with the exception of the horizontal intensity, which continued to be comparatively low; as the sky was overcast, nothing of an Aurora Australis could be observed, nor is any mention made of the phenomenon in the logs of Captain Tregarthon, of the *Mandarin*, and Captain Bichard, of the *Leopold*, who were respectively in lat. 40° S. and 122° E., and 41° S. and 139° E., with a strong breeze from W.S.W. and W. by N.

298. *February the 16th*, 1859.—Slight oscillations in the readings of the different magnetic instruments between 3h. and 4h. a.m.

299. *February the 17th and 18th*, 1859.—Oscillations of the magnets during the evenings, between 10h. and 11h. p.m., and a considerable brightness was visible towards north.

300. *February the 23rd*, 1859.—Great magnetic storm commencing at 6h. a.m., and lasting until 6h. p.m. with more or less vehemency.

The following table contains the principal features of the disturbances:—

Values of the Parts of Division		
	Declination	0·803′ (min.)
	Intensity	0·000149 (in parts of the intensity)
	Inclination	(0·441′ n″ + 0·123′ n′ (min.)

Time.	Declination.	H. Intensity.	Inclination.	Time.	Declination.	H. Intensity.	Inclination.
A.M.				P.M.			
h. m.				h. m.			
6 0	10·7	30·1	21·8	3 36	21·2	6·6	6·3
7 0	5·4	30·0	19·4	37	21·5	7·8	6·5
15	6·2	29·6	19·7	38	21·5	8·3	6·3
16	6·1	29·8	19·8	40	21·5	8·9	7·4
17	6·3	29·4	20·0	42	21·5	9·6	8·1
19	6·1	29·0	19·4	44	21·6	10·0	8 3
8 0	6·2	30·0	21·8	46	21·6	10·2	8·3
30	1·7	24·0	13·8	58	21·5	13·1	12·3
35	1·4	22·9	13·9	4 0	20·4	9·1	15·8
40	1·4	22·3	13·3	2	19·8	4·6	4·4
45	0·6	21·4	13·1	3	20·4	5·5	8·4
50	0·1	20·2	11·7	4	22·4	12·0	11·9
9 0	0·1	18·1	10·6	5	22·7	13·1	10·0
5	0·0	16·3	9·2	16	22·9	14·0	12·1
...	0·9	15·5	9·0	18	22·4	13·1	11·1
10 0	7·4	14·5	10·3	20	22·0	12·1	10·6
11 0	13·5	19·3	15·4	22	20·8	9·7	8·2
Noon	14·4	19·4	15·4	24	20·5	8·8	7·6
P.M.							
1 0	17·3	19·3	16·4	26	20·7	9·0	7·9
2 0	23·6	19·4	18·7	28	20·5	9·3	8·2
3 0	23·1	0·0	0·0	30	20·5	9·2	7·6
15	21·5	2·6	2·7	58	19·4	16·4	14·4
18	21·4	4·0	4·0	5 0	18·7	14·4	12·4
20	21·4	4·2	4·4	2	18·5	13·8	13·2
22	21·5	4·3	4·2	4	18·0	13·1	13·6
24	21·6	5·4	4·8	6	18·4	13·3	11·7
26	21·4	5·2	5·0	8	18·4	15·3	13·7
28	21·5	6·1	5·5	10	18·0	14·7	14·2
30	21·4	6·3	5·2	58	15·7	15·2	14·0
32	21·1	6·0	5·1	6 0	15·6	15·4	14·1
34	21·0	5·7	4·7				

301. *February the 24th*, 1859.—The magnets, after having returned to a more normal reading, again commenced to be disturbed at 5h. a.m., and continued so almost throughout the day. The greatest oscillations took place between 5h. and 7h. a.m., and from 10h. to 11h. p.m.

The following table contains the disturbances as registered on this day:—

Values of the Parts of Division { Declination ... ... 0·803′ (min.) / Intensity ... ... 0·000149 (in parts of the intensity) / Inclination ... ... 0·441′ n'' + 0·123′ n' (min.)

Time.	Declination.	H. Intensity.	Inclination.	Time.	Declination.	H. Intensity.	Inclination.
A.M. h. m.				A.M. h. m.			
5 0	12·8	27·6	26·3	7 0	7·4	9·5	7·8
35	4·4	24·9	20·3	8 0	8·9	6·2	5·5
36	4·3	24·4	19·6	9 0	16·2	5·6	9·2
37	4·1	24·4	19·6	10 0	13·0	7·4	5·2
38	4·1	23·9	18·9	11 0	14·9	4·6	11·6
39	3·8	23·3	18·2	Noon	19·0	5·4	11·1
40	3·5	22·8	18·2	P.M.			
41	3 3	22·4	16·9	1 0	21·8	9·2	13·1
42	2·8	22·1	17·2	2 0	23·9	6·3	7·6
43	3·0	22·3	17·3	3 0	22·1	13·9	14·3
44	3·6	21·8	18·0	4 0	21·4	11·7	12·1
45	4·1	21·5	17·8	...	...	...	...
46	4·8	21·3	18·0	5 0	20·1	8·1	8·4
47	5·2	20·9	17·8	6 0	19·1	7·9	8·1
48	5·8	20·7	17·9	7 0	17·9	0·0	0·2
50	6·5	20·1	17·6	8 0	16·2	2·8	2·9
51	6·8	19·2	16·9	9 0	13·2	0·0	0·0
6 0	10·0	16·8	16·9	10 0	9·6	1·4	1·1
16	15·8	14·7	17·5	25	0·0	9·8	7·3
18	16·5	15·2	17·8	42	0·0	14·3	13·0
19	17·2	15·2	18·1	44	0·9	15·9	13·5
20	17·2	14·9	17·4	45	1·9	16·6	14·2
23	16·7	15·2	17·4	48	2·8	17·4	16·2
24	16·5	14·9	16·6	50	4·5	18·4	16·7
25	15·6	15·3	16·7	11 0	0·4	10·2	7·6

According to information received from Professor Heiss, of Munster, an Aurora Borealis was seen in Europe between the hours of 7$^{h.}$ and 12$^{h.}$ p.m. on the 23rd—(4$^{h.}$ and 9$^{h.}$ a.m. on the 24th, Melbourne mean time).

302. *February the 25th*, 1859.—The disturbances in the magnetic elements continued through the morning of this day, and assumed their greatest values between 3$^{h.}$ and 4$^{h.}$ a.m.

303. *February the 27th*, 1859.—Soon after midnight, a splendid Aurora Australis became visible, the most prominent features of which are given below:—

At 12$^{h.}$ 25$^{m.}$, five or six streamers were seen extending on the horizon from S. to S.S.W.; they were all long, narrow rays, rose to an altitude of about 18°, and were of a pale grey color, but sharply defined; they soon disappeared, and were replaced, at 12$^{h.}$ 30$^{m.}$, by some of a broader but less defined character, which extended to S. by E.

12$^{h.}$ 40$^{m.}$—Scintillations were only barely visible; a luminous veil or vaporous appearance lying on the horizon, between S. by E. and S.W. by S.

12$^{h.}$ 45$^{m.}$—Two streamers to S. by E. and S., with a tinge of red; a smaller streamer to S.W. by S.

1$^{h.}$ 7$^{m.}$—A low, level bank of dark cloud lying directly on the horizon; the sky above it exceedingly luminous.

1$^{h.}$ 9$^{m.}$—Scintillations again visible; one streamer tinged red.

1$^{h.}$ 15$^{m.}$—No streamers visible.

1$^{h.}$ 21$^{m.}$—No streamers; luminous mass abruptly terminating over the Williamstown light. A few cirro-cum. clouds above the luminous mass to S.

1$^{h.}$ 26$^{m.}$—Luminous arch very beautiful; streamers again visible, broad and short but very distinct, of a pale yellow and greenish yellow color, very bright close to the level bank of cloud on horizon.

1$^{h.}$ 33$^{m.}$—Four very fine rays, short and not pointed, one extending as far as S.W., and one to S. by E., or even further.

1h. 38m.—Splendid long, narrow, pointed rays, very bright and sharply defined; the colors red and yellow, both distinctly developed. One ray, in.S.S.W., made (approximately) an angle of 89° with the horizon. To the S.S.E., a beautiful long red streamer; and in S. by W., and also more or less in S., rays like bundles of light, which did not descend to the luminous arc below; one ray, in S., rose as high as the smaller Magellan cloud. These streamers faded very rapidly, but were replaced, at—

1h. 44m., by others of exactly similar character.

1h. 47m.—All streamers disappeared, except one in S. by E.

1h. 51m.—Most beautiful streamers again, very broad; one extending to S.E. by S., making an approximate angle of 60° with the horizon; one, in S., intensely red.

2h. 5m.—Two streamers in S.S.E.; broad and dull, angle 84°.

2h. 9m.—No streamers visible.

2h. 15m.—The Auroral Light reached at this time its greatest brilliancy. The whole sky from S.S.E. to S.W. covered with the most brilliant rays, all of which appeared with the greatest rapidity; to the westward, a very fine red ray; one streamer, as nearly as could be ascertained, made an angle of 90° with the horizon, and was situated between S. by W. and S.S.W.; some of these streamers must have reached an altitude of 35°.

2h. 28m.—Bright rays of light shooting at times from the horizon, chiefly in S.S.W.

2h. 30m.—A broad pink stripe in S.W. by W., a few degrees above the horizon.

2h. 34m.—The greatest luminousness was in the azimuth of Nebula Major, a few degrees below it; the rays slightly inclined towards W.

2h. 39m.—A sharply defined ray, almost perpendicular, in S. by W.

2h. 41m.—Only diffused light, all over the sky from W.S.W. to S.S.E.

2h. 44m.—Electric tension 2·35, positive.

2h. 45m.—Badly defined broad streamers; universal red glow, extending as far as S. and S. by E.

2h. 50m.—Diffused reddish luminousness.

2h. 55m.—Luminous appearance very much duller.

3h. 8m.—One streak visible.

3 16m.—One feeble streak, about S.

3h. 30m.—Red ray in S.W. by S.; luminousness somewhat brighter; rather dark veil, or cirro-strat. clouds, hanging over S.S.W., in the form of an inverted arch.

4h.—Luminousness almost totally disappeared. The disturbance observations during this display of the Aurora are given in the following table:—

Values of the Parts of Division { Declination ... ... 0·803′ (min.); Intensity ... ... 0·000149 (in parts of the intensity); Inclination ... ... 0·441′ n'' + 0·123′ n' (min.)

Time.	Declination.	H. Intensity.	Inclination.	Time.	Declination.	H. Intensity.	Inclination.
				A.M. h. m.			
Midnight	5·5	10·6	9·6	2 26	7·4	11·9	14·6
A.M. h. m.							
12 34	0·4	11·8	9·3	27	9·9	11·0	11·8
43	2·5	8·8	7·5	28	10·1	10·7	10·9
44	3·4	8·3	7·2	29	10·2	9·7	10·6
45	4·1	7·9	7·0	30	9·9	9·6	10·0
46	4·5	7·8	7·3	43	6·9	17·0	17·0
47	5·4	7·9	7·6	44	6·2	19·1	18·5
48	6·4	7·9	7·4	47	4·5	22·8	21·9
49	7·0	8·0	7·4	51	6·5	24·4	23·4
54	6·4	9·3	8·7	52	7·2	24·5	23·4
59	6·4	8·1	12·1	54	8·3	23·7	22·6
1 0	8·4	10·0	9·2	3 0	11·9	18·3	18·3
1 1	8·3	10·0	8·9	22	20·2	13·3	16·6
2	8·0	9·6	8·8	23	21·3	13·0	16·0
0	8·3	9·2	7·8	24	22·1	13·9	15·9
29	4·4	0·0	0·0	25	22·9	14·8	18·0
30	5·2	0·3	0·3	27	24·4	13·7	16·7
31	5·7	0·3	1·1	38	27·5	18·6	21·4
32	6·3	0·8	1·8	40	26·6	19·9	22·3
2 0	0·0	3·3	2·2	41	25·9	30·4	22·6
2	0·0	2·6	1·8	4 0	21·3	18·9	21·0
4	0·2	2·2	1·5	5 0	19·5	12·3	15·5
24	7·4	14·0	13·6	6 0	16·4	16·2	17·0

I received information from Professor Heiss, of Munster, that an Aurora Borealis and great magnetic disturbances had been observed in Europe during the evening of the 26th (morning of the 27th, Melbourne mean time).

VII. SOLAR SPOTS.

304. The registration of solar spots was not carried on systematically during the year 1858–59, as no arrangement could be made to insure the uninterupted progress of investigations of this nature; the more so as with the limited means at the disposal of the Observatory more urgent questions had to be taken into consideration, with a view of contributing towards their final solution.

305. The instrument used in drawing the solar spots was manufactured at the optical workshop of Ch. Steinheil, of Munich, and the magnifying power applied is 79′, the aperture of the glass being three inches. The spots were divided into groups, and the single ones are described with "very fine spots," "fine spots," "spots," "small spots," "specks," "small specks;" proceeding from the largest size observed to a speck scarcely discernible with the telescope above described.

306. Drawings of the sun have been made on the following days, including also some observations made in 1857:—

February the 21*st*, 1857.—One group of spots only.

September the 17*th*, 1857.—One group of spots observed during the eclipse of the sun.

October the 15*th*, 1857.—Two groups of spots $4^{h.}$ $15^{m.}$ p.m.:—I. Pretty large spot and several specks. II. Several very small specks.

October the 21*st*, 1857.—One small spot only.

October the 23*rd*, 1857.—One small spot and several little specks.

October the 27*th*, 1857.—Only a few very small specks.

November the 7*th*, 1857.—Two groups of spots:—I. Two spots. II. One spot.

November the 26*th*, 1857.—One fine spot.

December the 18*th*, 1857.—Three groups of spots:—I. Three small spots. II. Several small specks. III. One fine spot.

March the 2*nd*, 1858.—Five groups of spots:—I. A single spot. II. A single spot. III. Seven little specks. IV. One fine spot. V. One spot, and four little specks.

March the 13*th*, 1858.—Two groups of spots:—I. One single spot. II. Several little specks.

March the 18*th*, 1858.—Three groups of solar spots:—I. A very extensive and fine spot. II. One spot and several specks. III. One spot and a little speck.

May the 9*th*, 1858.—One group of spots, consisting of one single spot and three specks.

May the 17*th*, 1858.—One group, consisting of a single spot.

May the 25*th*, 1858.—Four groups of solar spots:—I. A fine spot, surrounded by five or six little specks. II. Three little specks in a straight line, parallel to the equator of the sun. III. Four small specks. IV. One single little speck.

June the 4*th*, 1858.—Three groups:—I. One fine spot, with several little specks. II. Two small spots. III. A cluster of little specks.

June the 8*th*, 1858.—Four groups of solar spots and faculæ:—I. A fine solar spot, surrounded by four little specks and some bright points. II. Faculæ. III. Two small spots, surrounded by faculæ. IV. A few faculæ.

June the 14*th*, 1858.—One fine spot only.

June the 23*rd*, 1858.—Two groups of solar spots:—I. One small spot. II. Three specks.

June the 24*th*, 1858.—Four groups:—I. One small spot. II. Four specks.

June the 28*th*, 1858.—Two groups of solar spots, at $9^{h.}$ $15^{m.}$ a.m. I. One small spot and several little specks. II. Three small spots and a great number of little specks.

June the 29*th*, 1858.—Five groups at $4^{h.}$ $5^{m.}$ p.m.:—I. Six small spots and specks. II. One little speck and a cluster of faculæ. III. Three small spots and faculæ. IV. One spot and a small speck. V. One small spot and three specks. I., III., IV., and V. were nearly connected with each other by very small specks, and the whole system of groups extended in the direction of the sun's equator, or parallel therewith.

July the 2nd, 1858.—Seven groups of solar spots at $4^{h.}$ $5^{m.}$ p.m. :—I. One spot with a small speck and faculæ. II. Two spots united by a halo. III. One spot and several specks. IV. Two small spots. V. One small spot. VI. Two small spots. VII. Two small spots united by a halo, and close by faculæ. The whole range of these different spots extended in the direction of the sun's equator.

August the 4th, 1858., at $9^{h.}$ a.m.—One fine solar spot.

August the 20th, 1858.—Three groups :—I. Two spots joined by several specks. II. Several little specks. III. Two spots joined by several little specks.

307. During the year 1859–60 these investigations were carried on systematically, and drawings of the sun have been made for nearly seventy different days. To do still more justice to a matter of such importance arrangements are being made to take photographic sketches of the sun's surface and measure the single spots with the help of a position and ring micrometer attached to the telescope above referred to.

By Authority : John Ferres, Government Printer, Melbourne.

ERRATA.

PAGE iv.—Sixteenth line from the bottom, *for* "five days means" *read* "five day means."

PAGE 9.—Twenty-sixth line from the bottom, *for* "only) (2 to 3)" *read* "only 2 to 3.)"

PAGE 46.—First line (January the 1st), *for* "29·824" *read* "29·810."
" Thirteenth line from the bottom, *for* "61·3 and 82·4" *read* "60·4 and 67·8."
" Sixth line from the bottom, *for* "29·554" *read* "29·549."
" First line from the bottom, *for* "67·54 and 78·14" *read* "67·51 and 77·38."

PAGE 47.—Twentieth line from the bottom, *for* "64·3" *read* "63·3."
" First line from the bottom, *for* "71·31" *read* "71·28."

PAGE 50.—Third line from the top (February 2nd), *for* "30·000" *read* "29·992."
" Twentieth line from the bottom, *for* "29·589" *read* "29·454."
" Fifth line from the bottom, *for* "29·886" *read* "29·905."
" Third line from the bottom, *for* "50·4" *read* "48·2."
" First line from the bottom, *for* "54·61 and 29·808," *read* "54·73 and 29·804."

PAGE 51.—Seventh line from the bottom, *for* "62·0," *read* "63·0."
" First line from the bottom, *for* "71·09," *read* "71·12."

PAGE 54.—Seventeenth line from the top, *for* "of the periods of rain," *read* "of the hours of rain."

PAGE 58.—First line from the top, *for* "in surface soil," *read* "in temperature of surface soil."

PAGE 64.—Fifth line from the top, *for* "with one object in view," *read* "with the same object in view."

PAGE 78.—First line from the bottom, *for* "relative values," *read* "relative values (88)."

PAGE 80.—Second line from the top, *for* "slighest," *read* "slightest."

PAGE 85.—Thirty-fifth line from the bottom, *for* "Aurora Australis visible during moonlight," *read* "Terrestrial light in the moon."

PAGE 86.—Third line from the bottom, *for* "Antraes," *read* "Antares."

PAGE 93.—Fifth line from the bottom, *for* "vertical," *read* "vertically."

PAGE 98.—Fifth line from the bottom, *for* "29·808," *read* "29·804."
" Fourth line from the bottom, *for* "65·35 and 29·784," *read* "65·34 and 29·783."

PAGE 99.—Sixth line from the bottom, *for* "71·31," *read* "71·28."
" Fifth line from the bottom, *for* "71·09," *read* "71·12."

PAGE 100.—First line from the top, *for* "Upper Currents," *read* "XI. Upper Currents."

PAGE 135.—Seventh line from the bottom, *for* "tension of our atmospheric," *read* "tension of atmospheric."

PAGE 136.—Sixth line from the bottom, *for* "Surveyor," *read* "District Surveyor."

PAGE 142.—Seventeenth line from the bottom, *for* "3·655 and 0·150," *read* "2·915 and 0·166."

PAGE 143.—Seventh line from the top (Melbourne), *for* "66·7 and 74·4," *read* 66·6 and 74·7."
" Seventeenth line from the top, *for* "29·873, 29·769, and 29·696," *read* "29·871, 29·768, and 29·669."

PAGE 146.—Second line from the bottom, *for* "S.E., N.W.," *read* "S.E.N.W."

PAGE 156.—Thirteenth line from the top (Melbourne), *for* "29·809," *read* "29·804."

PAGE 159.—Section 135. In this table the values for Melbourne are to be inserted.

PAGE 160.—Eighth line from the top, *for* "0·7 7," *read* "0·727."

PAGE 169.—Nineteenth line from the bottom, *for* "Nautical Observatory of," *read* "National Observatory at."

PAGE 197.—Second line from the bottom, *for* "strong rain," *read* "heavy rain."

PAGE 198.—Eighth line from the bottom, *for* "the 23rd and 27th," *read* "23rd of June and 27th of June."

PAGE 206.—Thirtieth line from the top, *for* "S.E. and by E." *read* "S.E. by E."

PAGE 213.—Second line from the top, *for* "une extrait," *read* "un extrait."
" Fourth line from the top, *for* "utilis," *read* "utiles."
" Sixteenth line from the top, *for* "Americaino," *read* "Américain."
" Twentieth line from the top, *for* "le mer," *read* "la mer."
" Twenty-second line from the top, *for* "le mer" *read* "la mer."
" Fifth line from the top, *for* "de vent fort," *read* "des vents forts."

PAGE 250.—Sixth line from the bottom, *for* "200" *read* "254."

PAGE 261.—Seventh line from the top, *for* "79′" *read* "79."

MARCH 1858.

L.7/7

TABLE I.

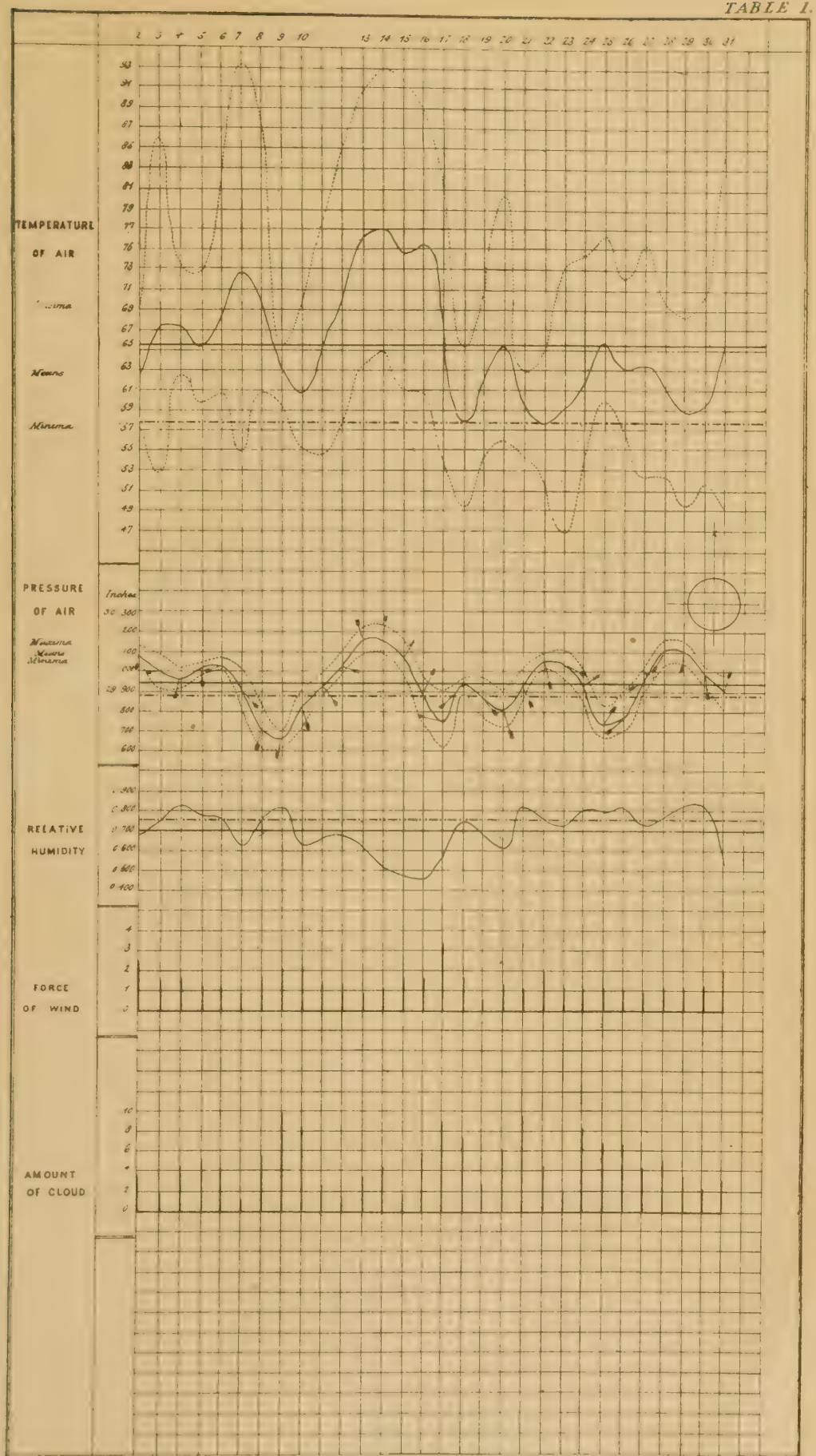


Photo-lithographed by J.W. Osborne, at the Department of Lands & Survey, Melbourne.

November 16th 1860.

APRIL 1858.

TABLE 2.

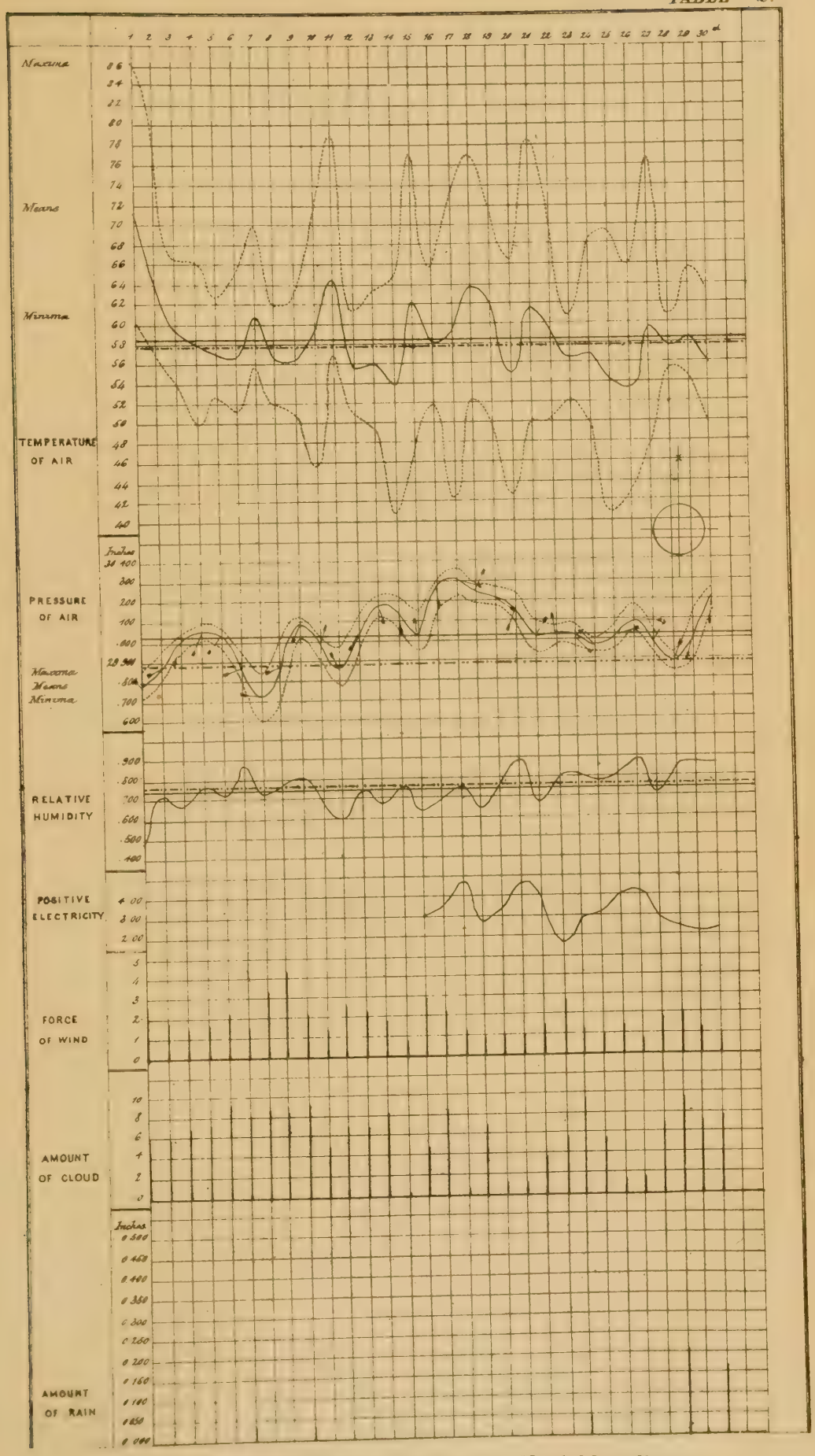


Photo lithographed by J.W. Osborne, at the Department of Lands & Survey Melbourne

Dec^r 17^th 1860

MAY 1858

TABLE 3

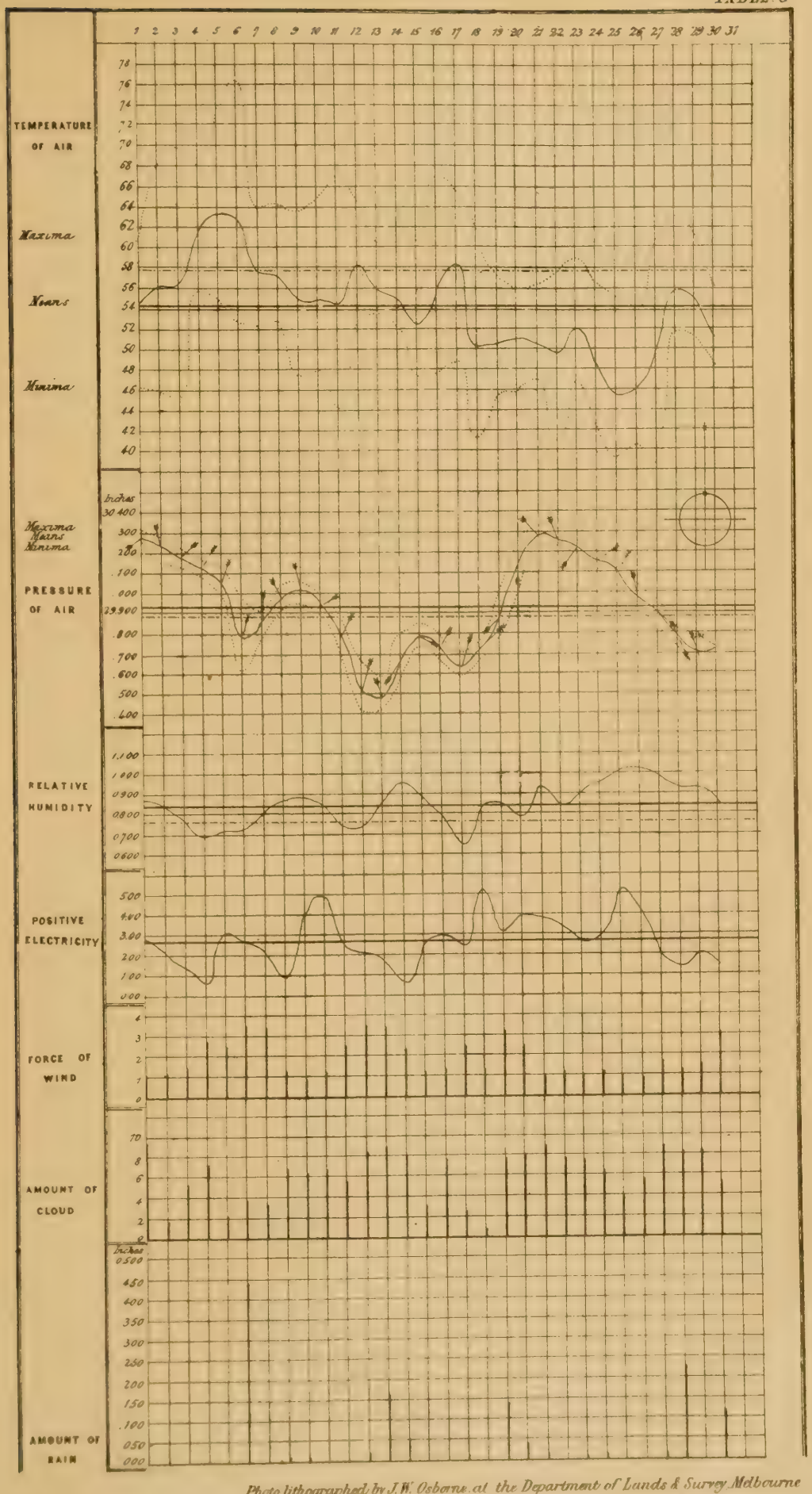


Photo lithographed by J.W. Osborne at the Department of Lands & Survey Melbourne

Number 8 of 8

JUNE 1858

4 706

TABLE 1

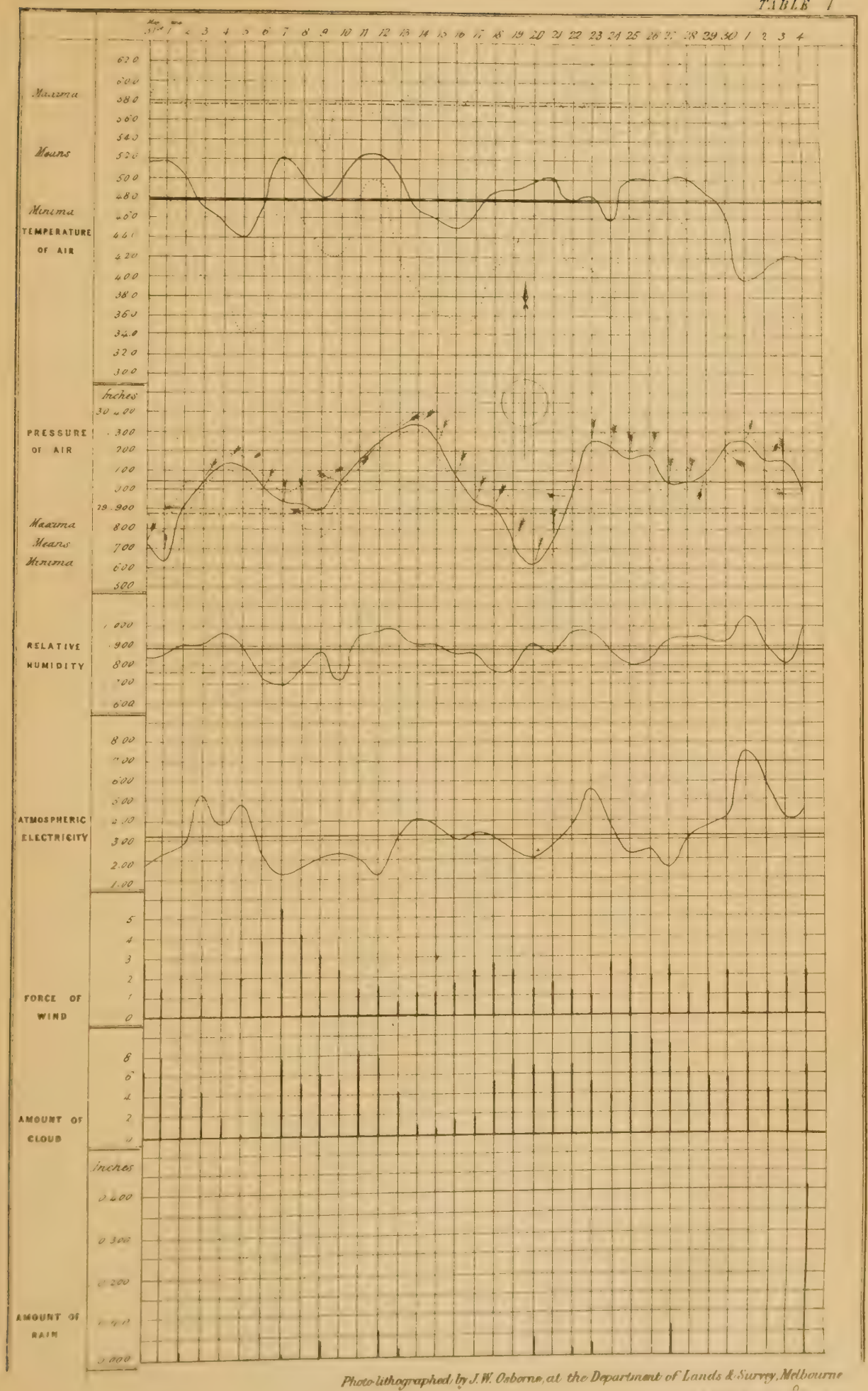


Photo-lithographed by J.W. Osborne, at the Department of Lands & Survey, Melbourne

JULY 1858.

L 715

TABLE 5.

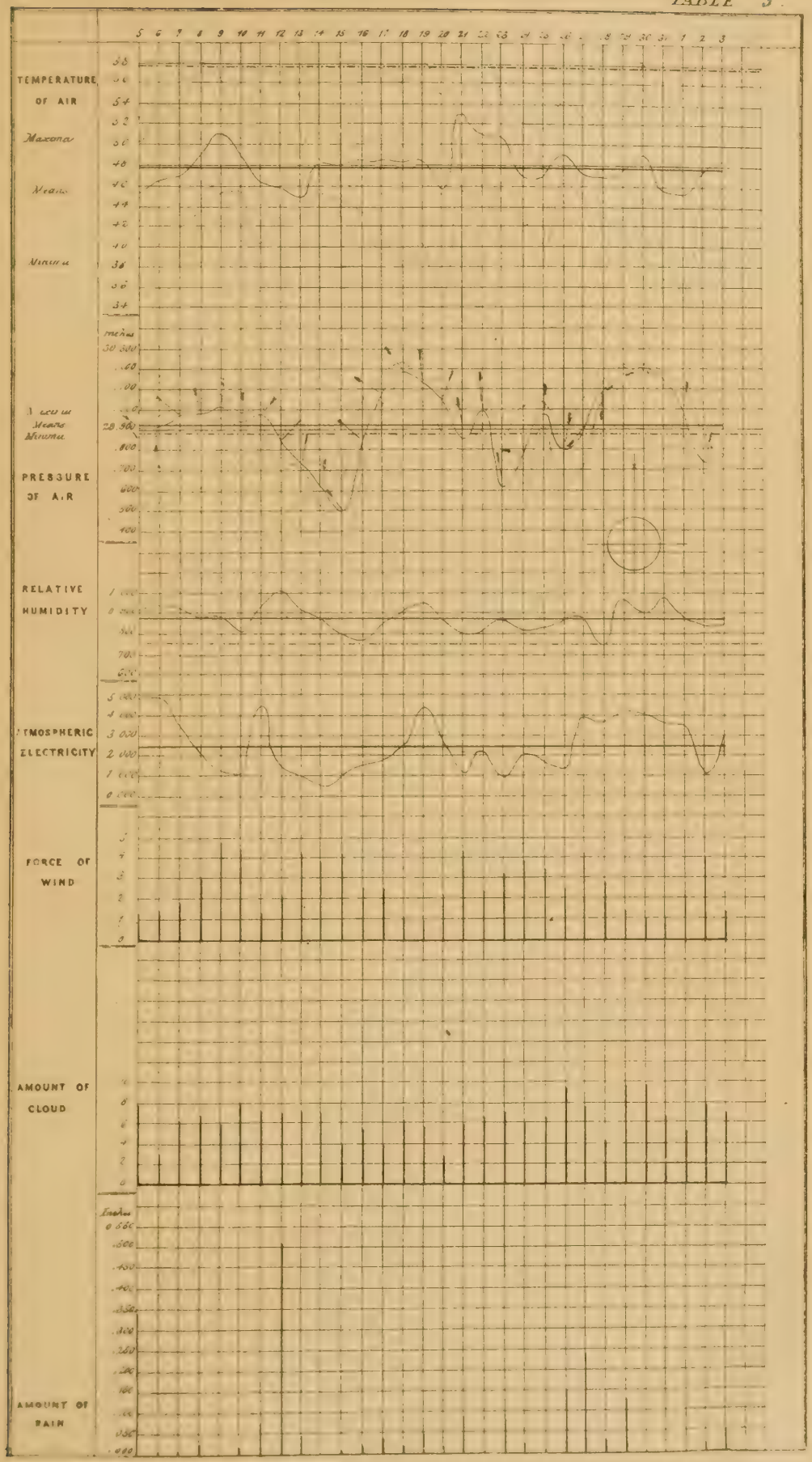


Photo-lithographed by J.W. Osborne, at the Department of Lands & Survey, Melbourne

November 16th 1860.

AUGUST 1858.

L. 712

TABLE 6.

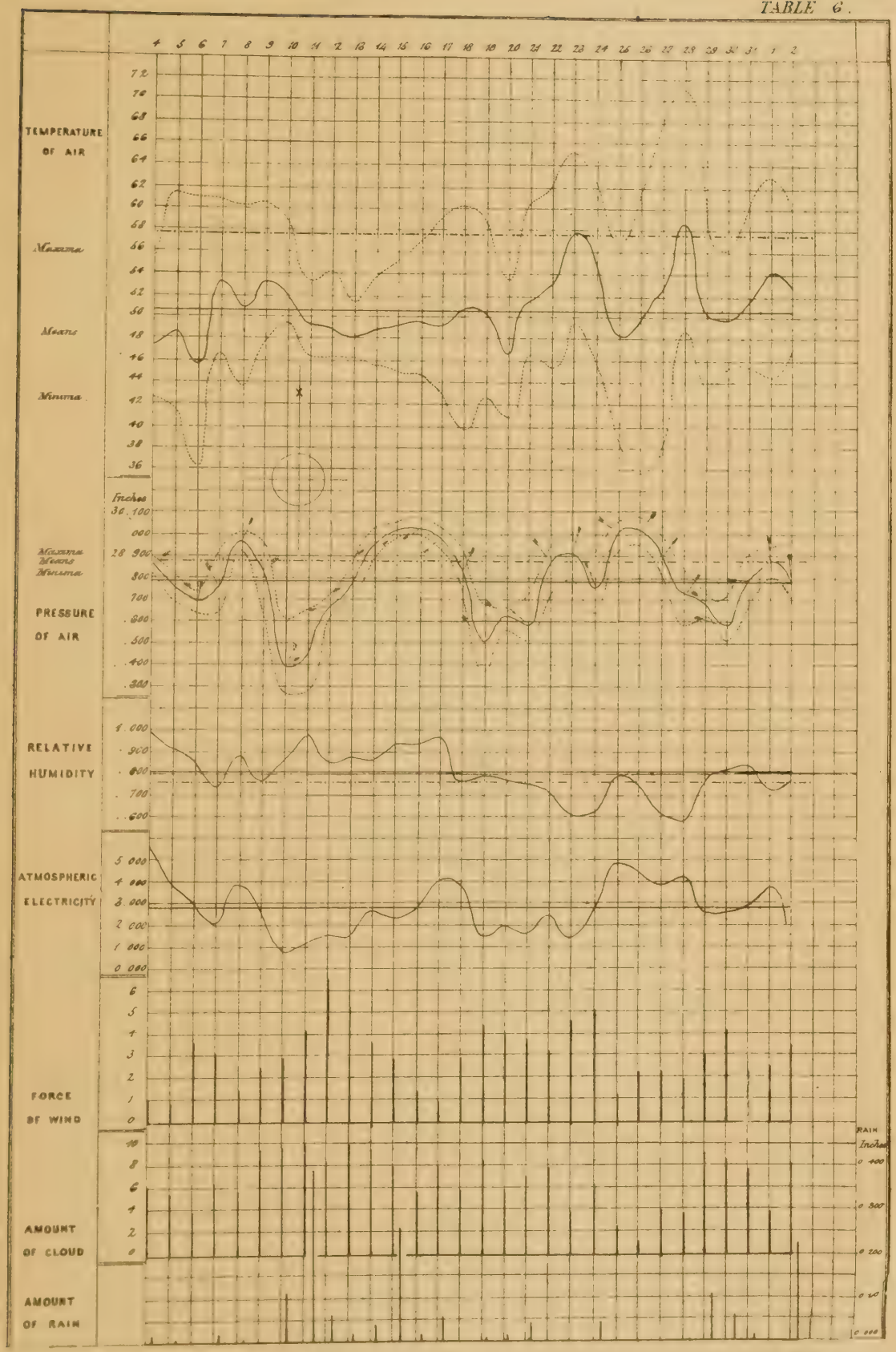


Photo-lithographed by J.W. Osborne, at the Department of Lands & Survey, Melbourne.

November 16th 1860

L. 704

SEPTEMBER 1858.

TABLE 7.

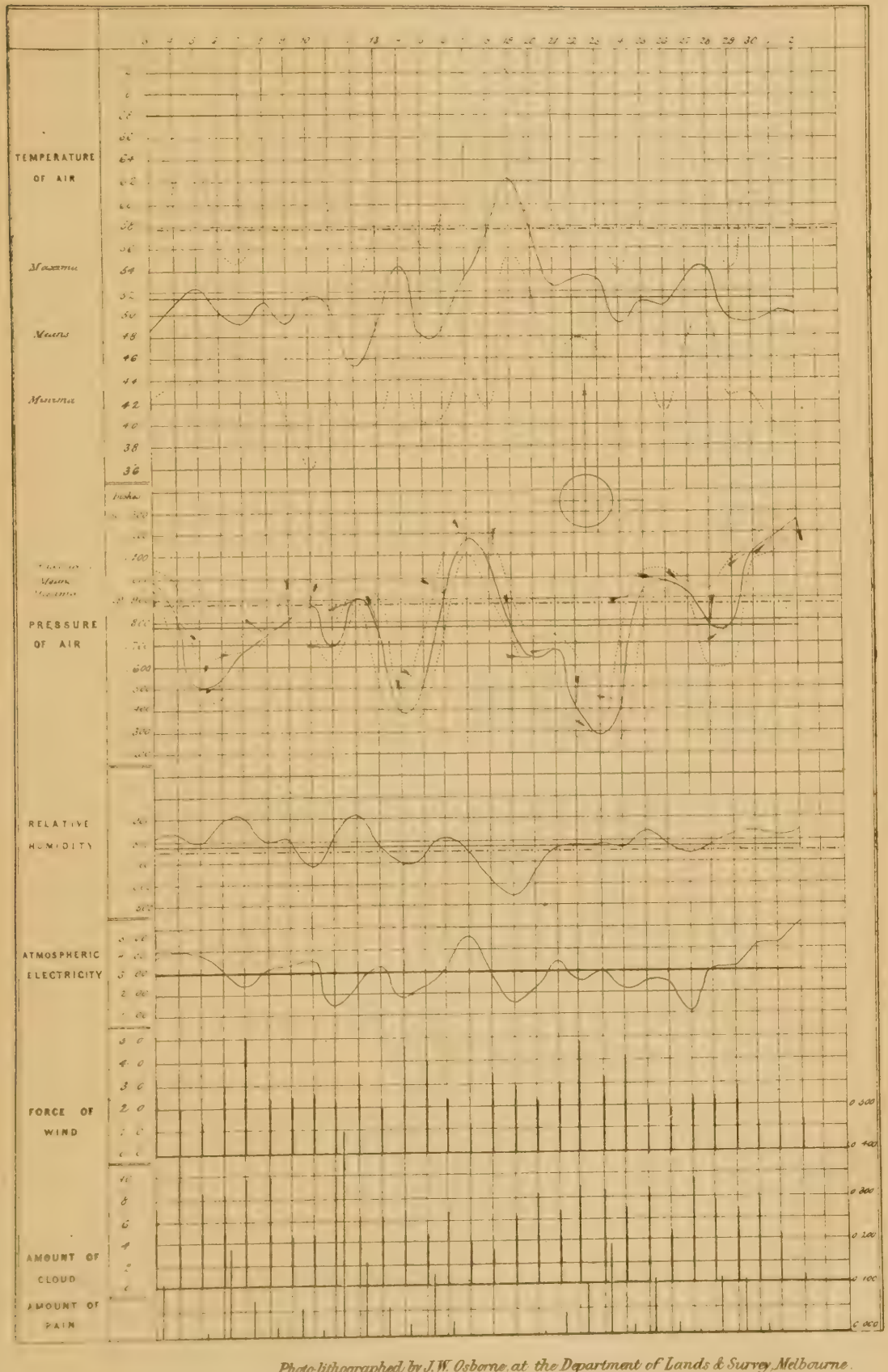


Photo-lithographed by J.W. Osborne, at the Department of Lands & Survey, Melbourne.

November 16th 1858.

OCTOBER 1858

L. 713

TABLE 8

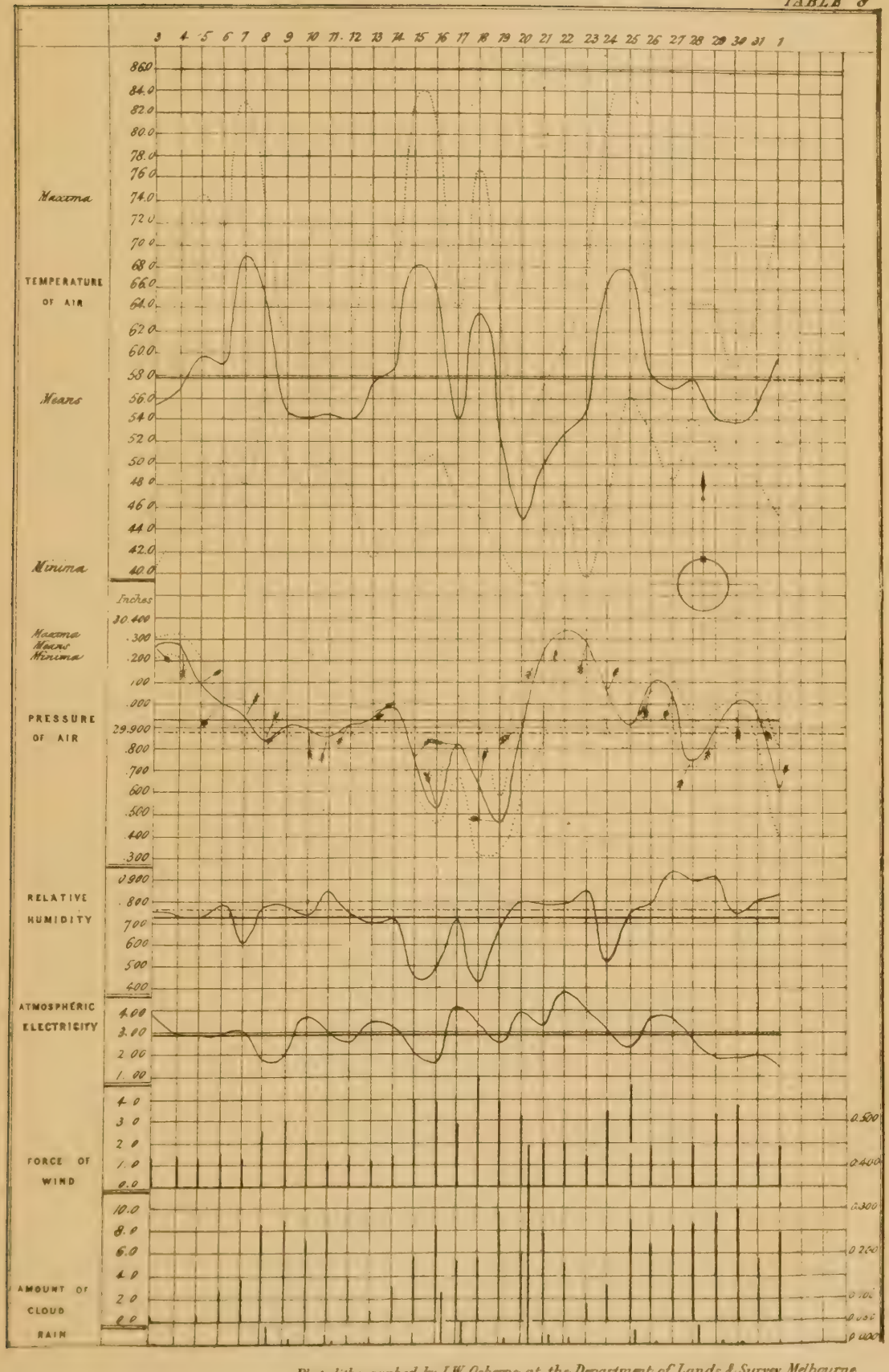


Photo-lithographed by J.W. Osborne, at the Department of Lands & Survey Melbourne

November 16th 1860

L. 705

NOVEMBER 1858

TABLE. 9

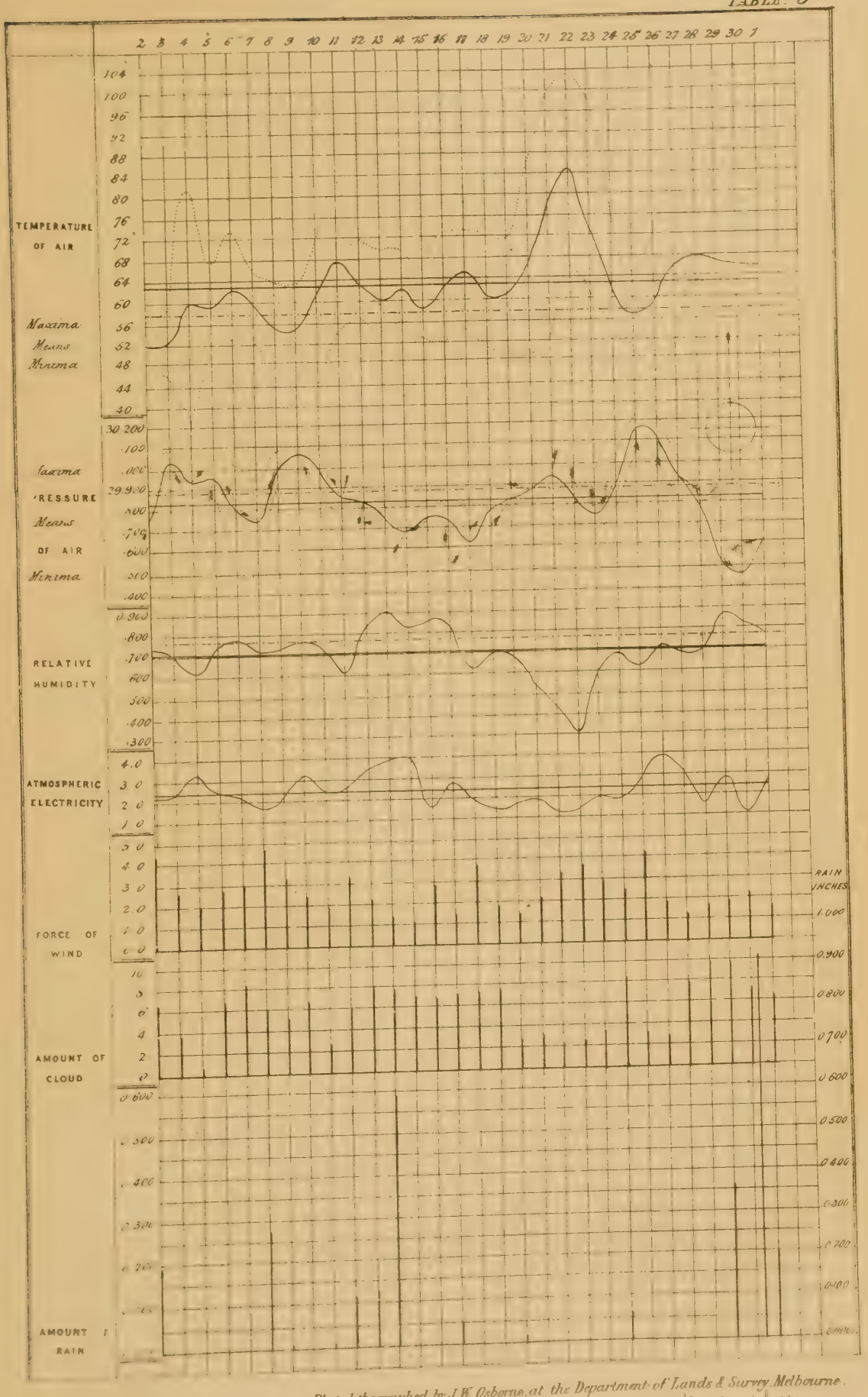


Photo lithographed by J.W. Osborne, at the Department of Lands & Survey Melbourne.
November 6th 1860.

DECEMBER 1858

L. 711

TABLE. 10

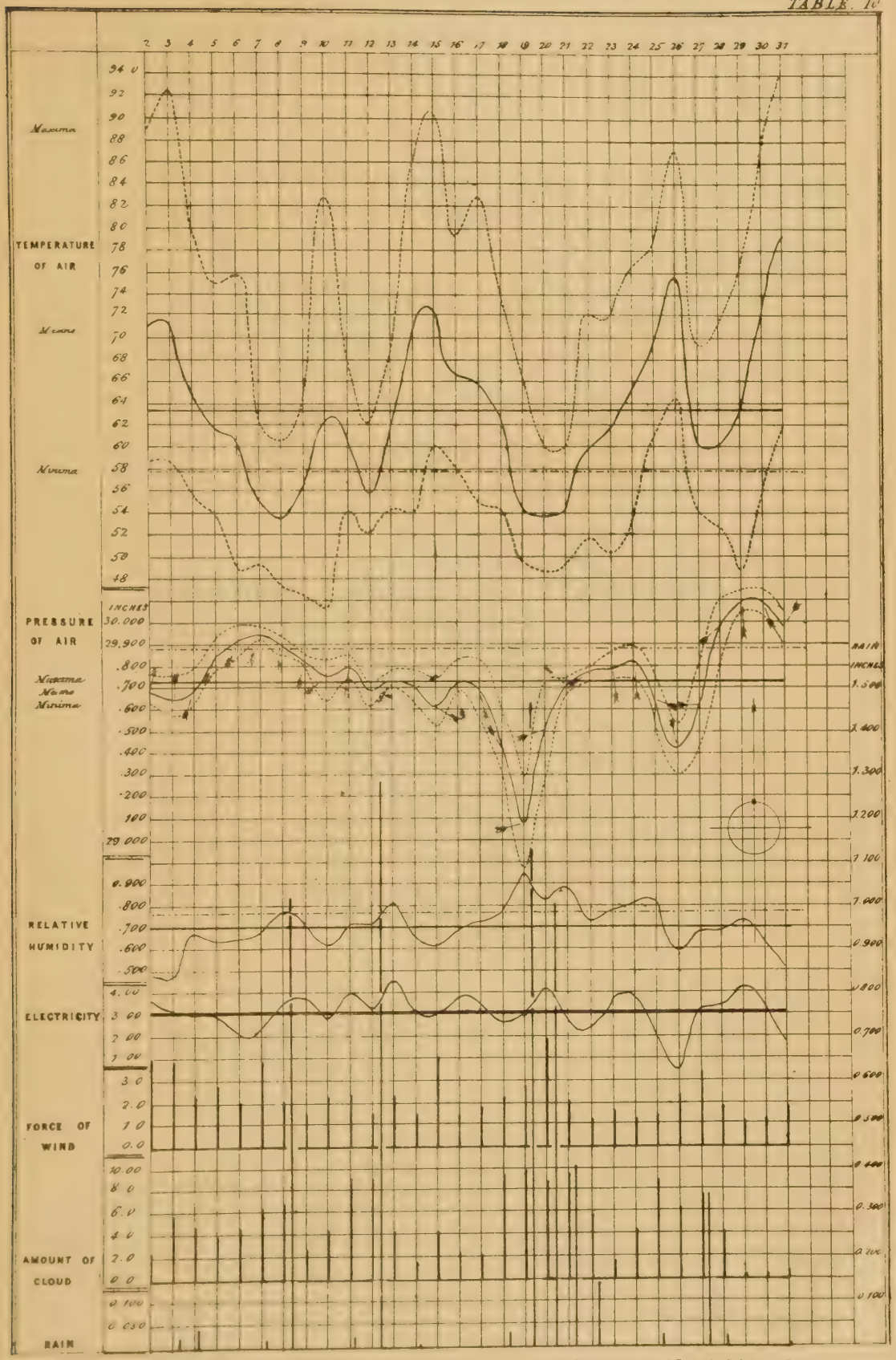


Photo-lithographed by J.W. Osborne, at the Department of Lands & Survey Melbourne

JANUARY 1859.

L. 710

TABLE 11.

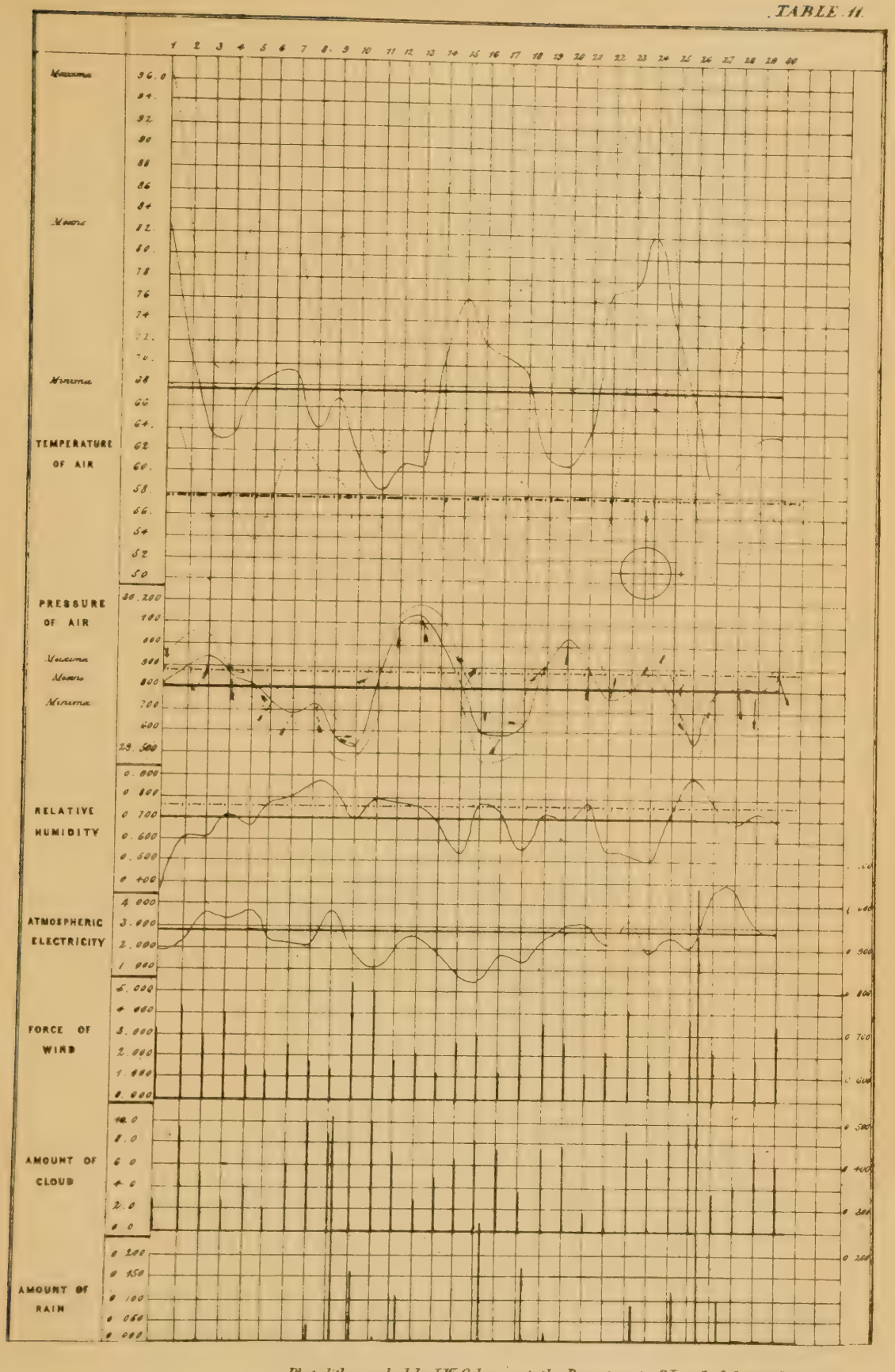


Photo-lithographed by J.W. Osborne at the Department of Lands & Survey Melbourne.
November 16th 1860

FEBRUARY 1859.

TABLE 12.

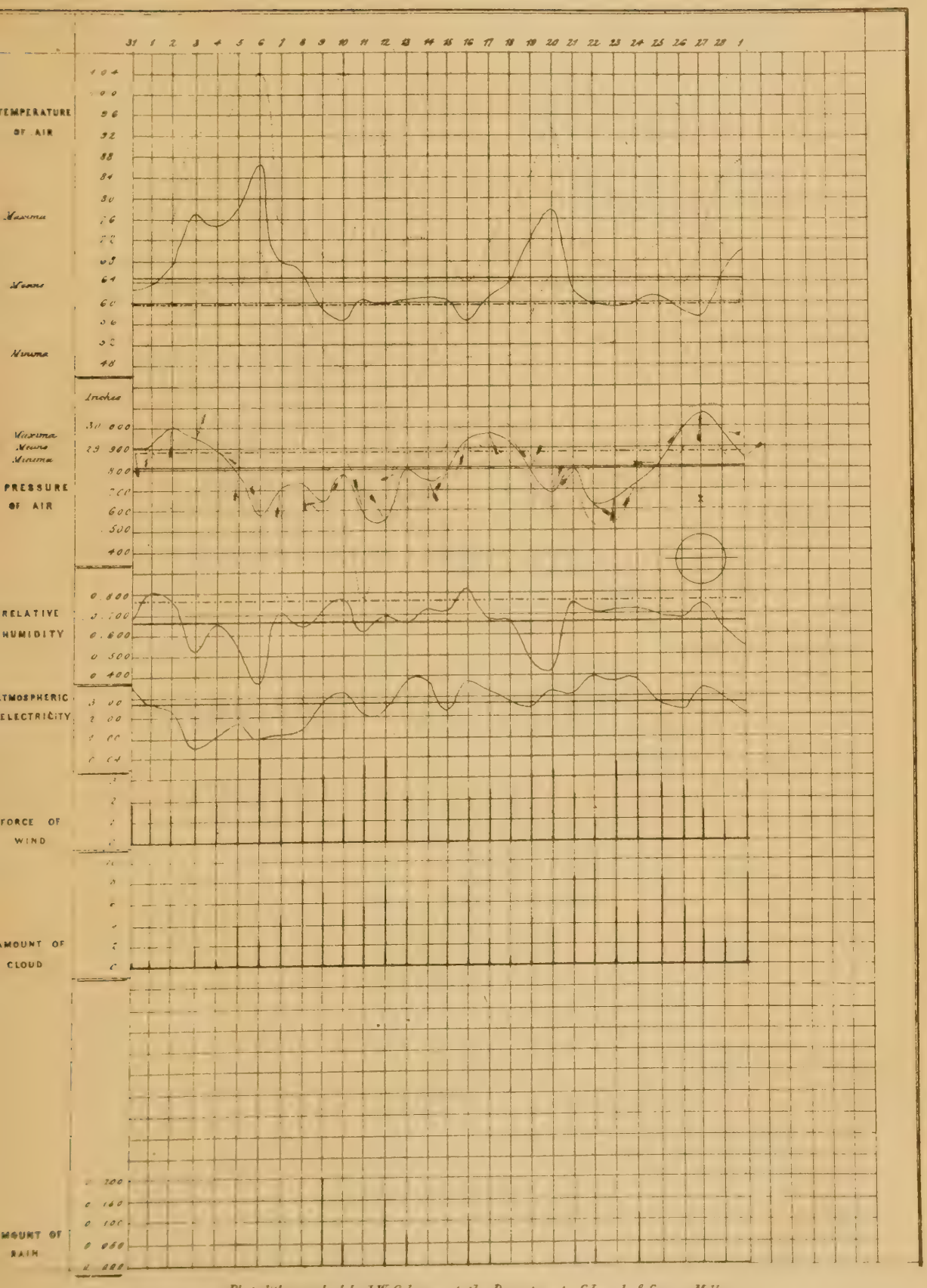


Photo lithographed by J.W. Osborne, at the Department of Lands & Survey Melbourne

Dec.r 17th 1860

Curves shewing the Yearly Variation

TEMPERATURE OF AIR

for each Month from March 1858 to March 1859

L 714

TABLE 15

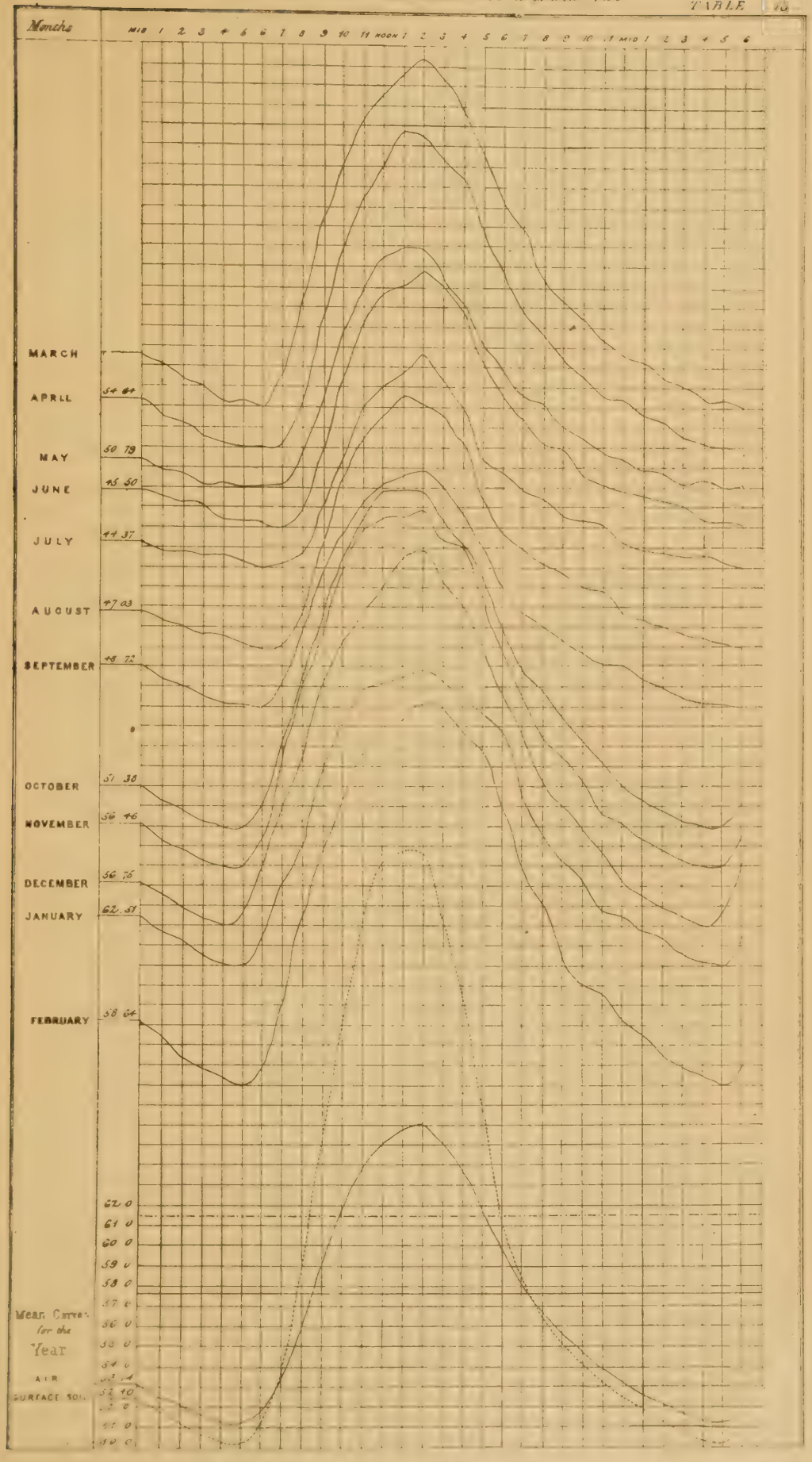


Photo-lithographed by J. W. Osborne at the Department of Lands & Survey Melbourne

December 30th 1859

Curves shewing the Mean Horary Variations in

ATMOSPHERIC PRESSURE

from MARCH 1858 to MARCH 1859.

L.716

TABLE 14

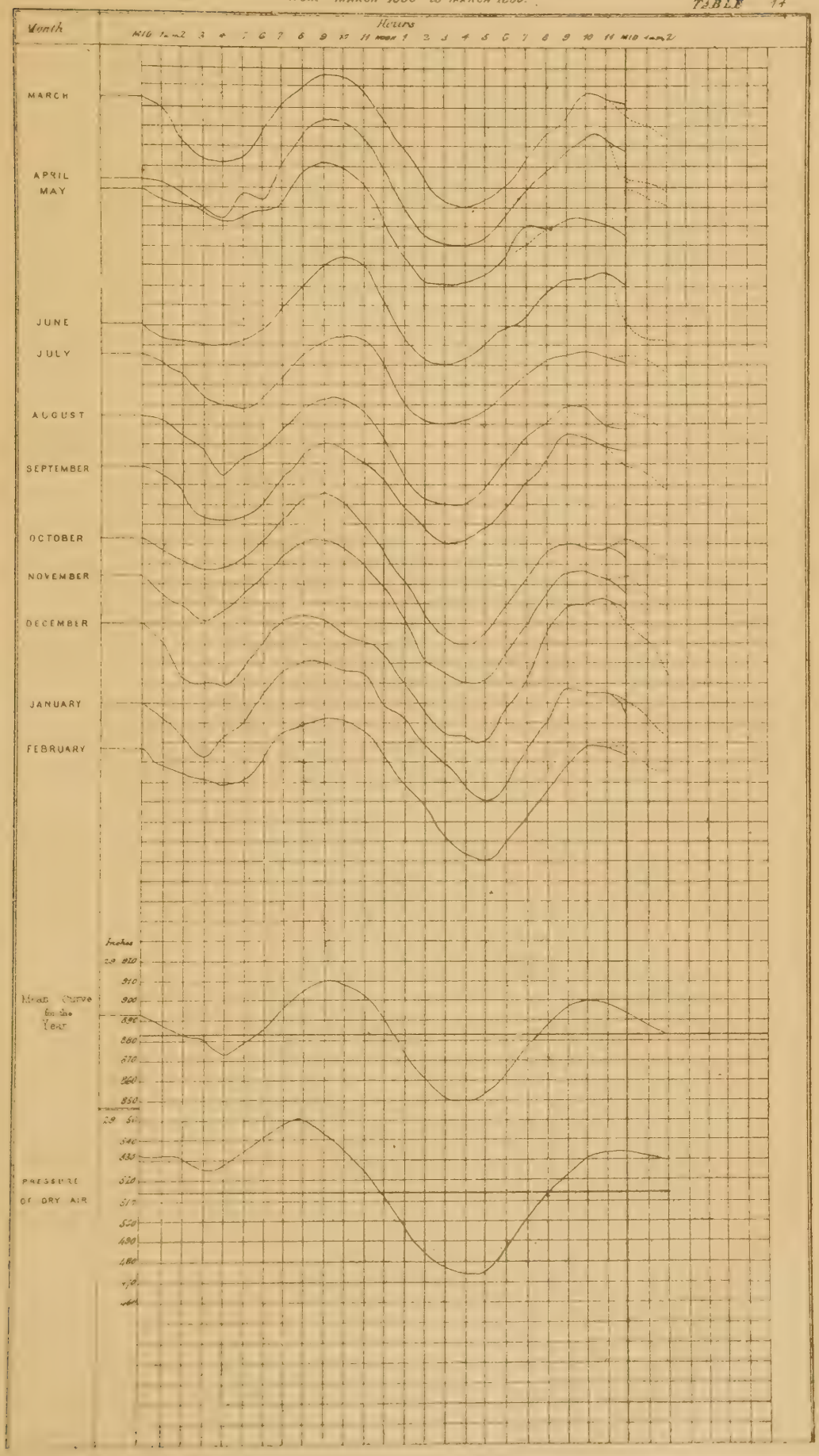


Photo lithographed by J.W. Osborne at the Department of Lands & Survey, Melbourne

Dec.r 11th 1860

Curves shewing the Horary Variations

PRESSURE OF VAPOR.

For each Month from March 1858 to March 1859.

L.703

TABLE 15.

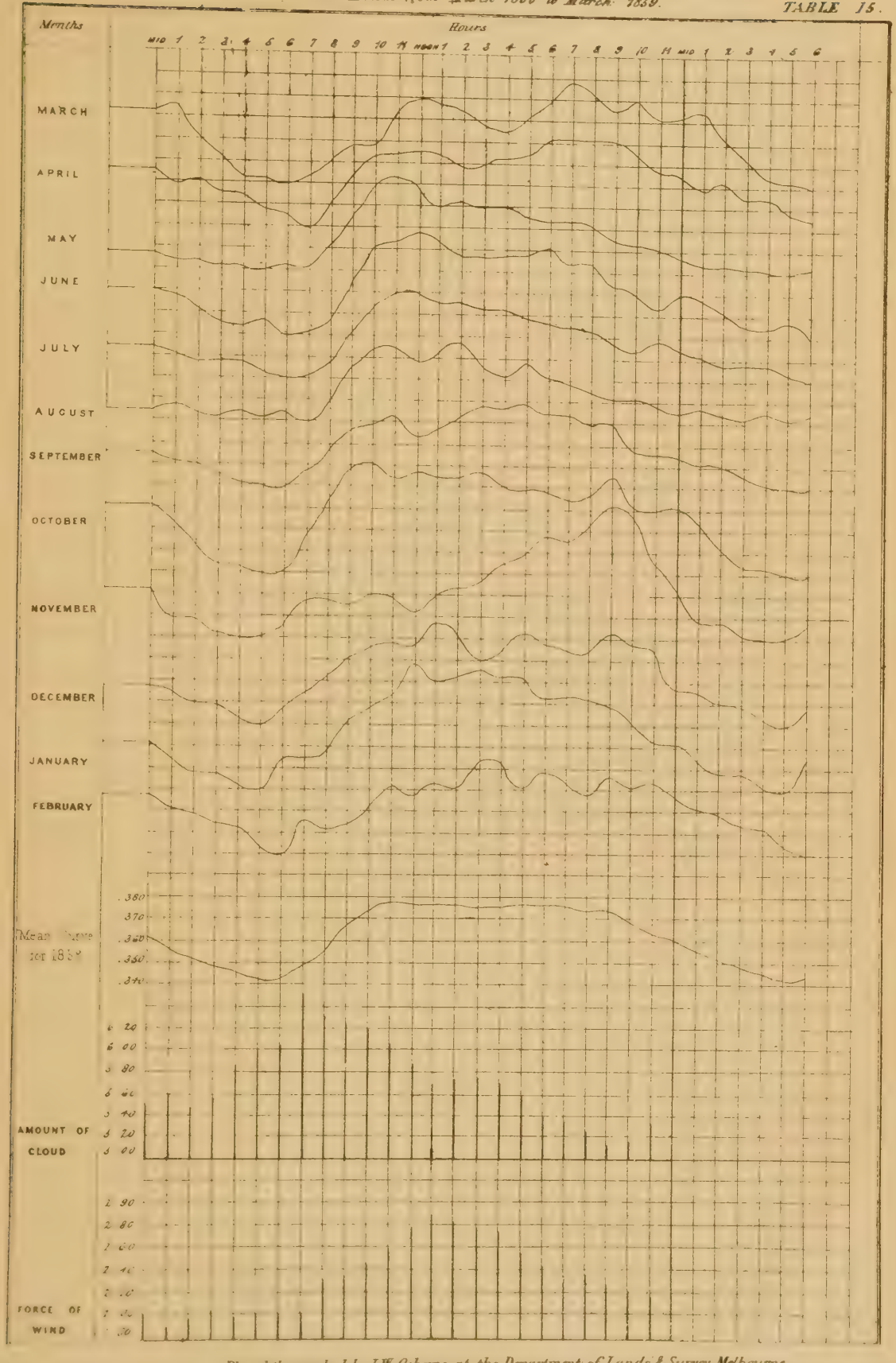


Photo lithographed by J.W. Osborne at the Department of Lands & Survey, Melbourne

Dec^r 17^th, 1860

Curves shewing the Horary Variations

ATMOSPHERIC ELECTRICITY.

L. 702

for each Month from March 1858 to March 1859.

TABLE 16.

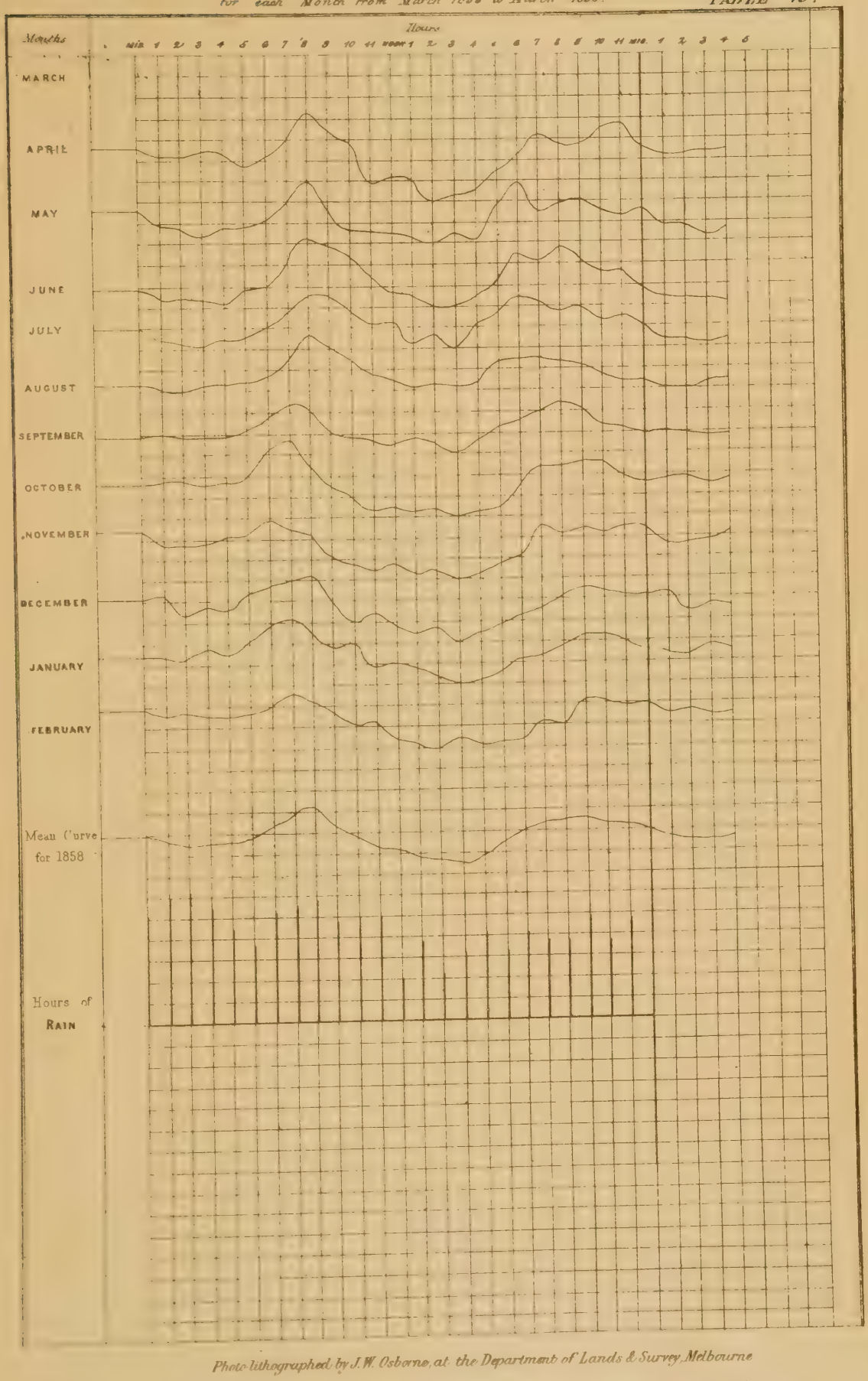
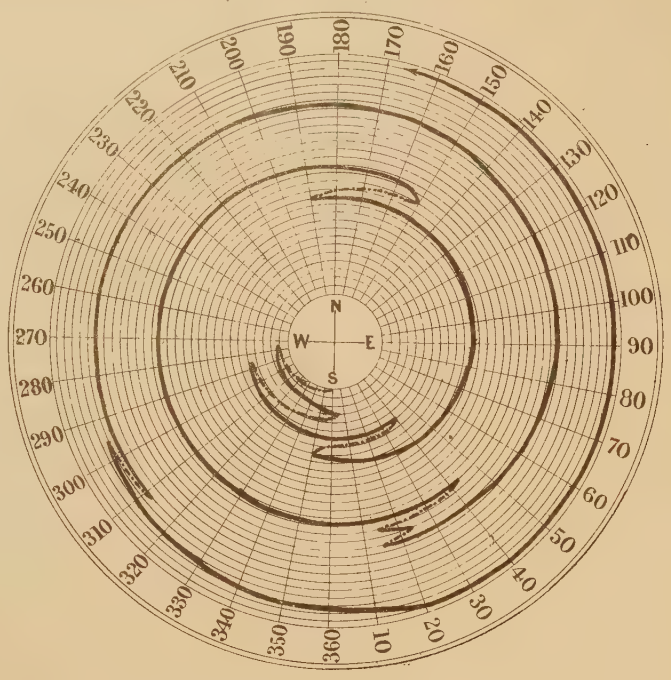


Photo-lithographed by J.W. Osborne, at the Department of Lands & Survey, Melbourne

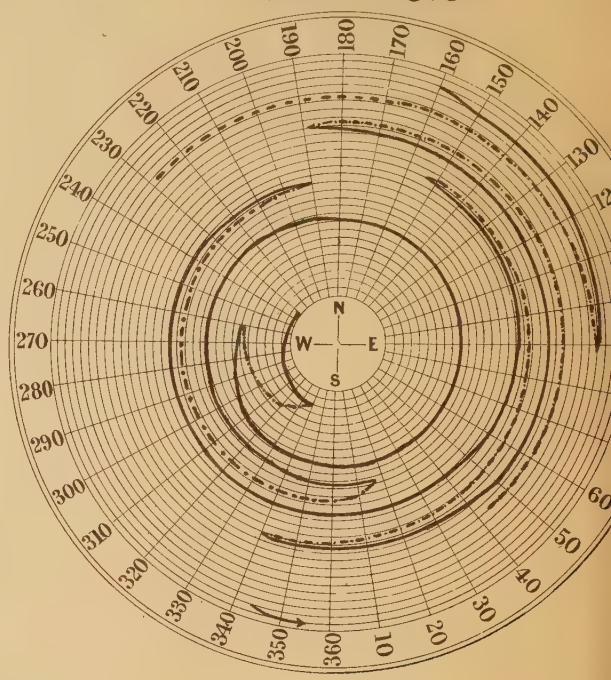
Dec.r 17th 1860

MEAN DIRECTIONS OF THE WIND

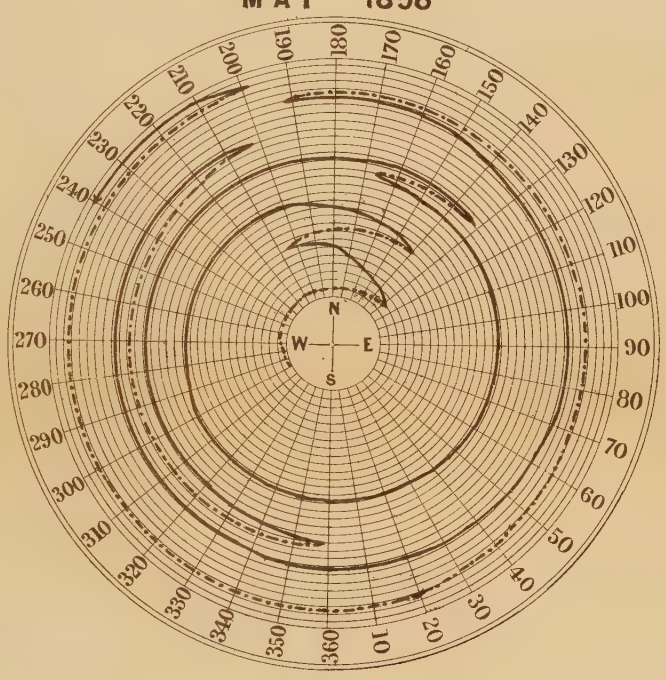
MARCH 1858



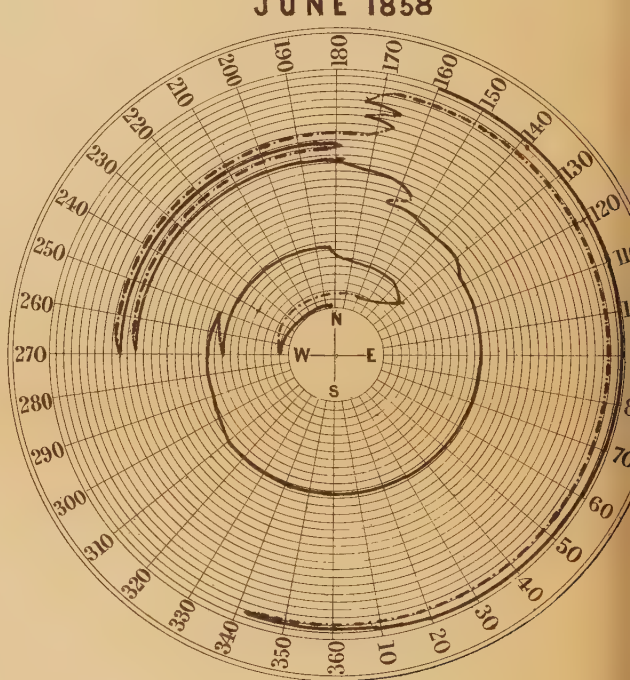
APRIL 1858



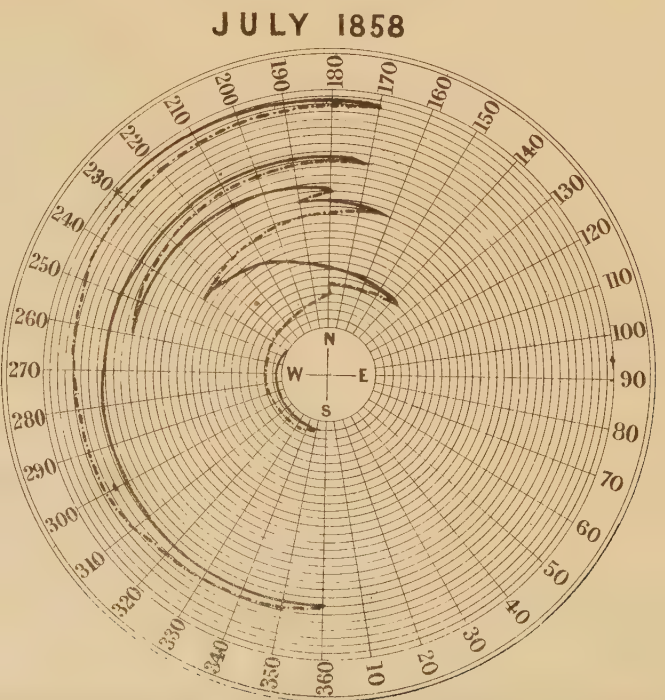
MAY 1858



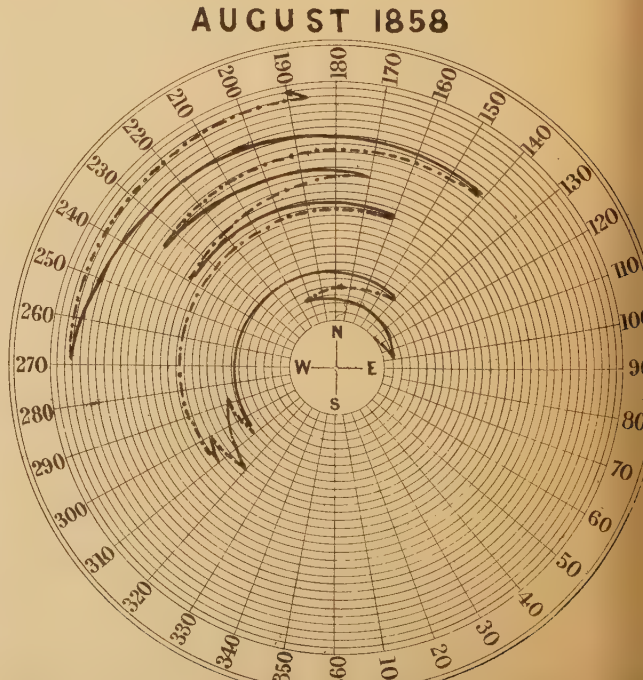
JUNE 1858



JULY 1858



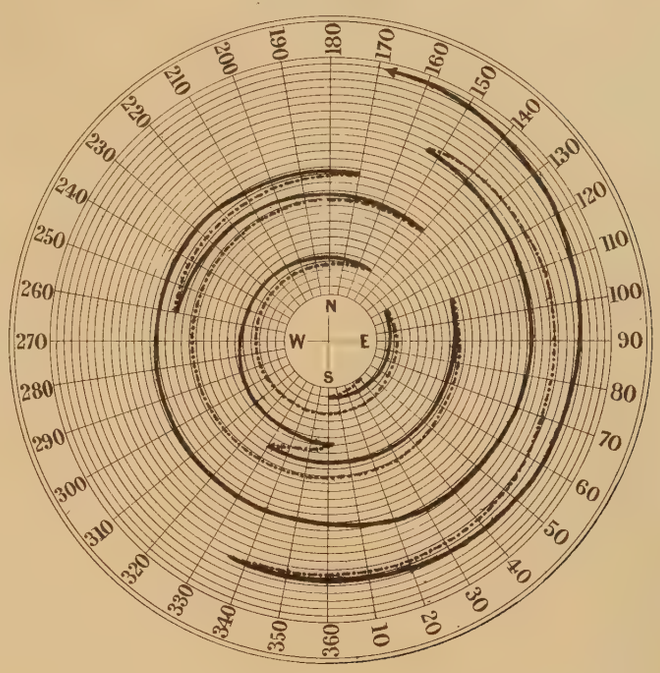
AUGUST 1858



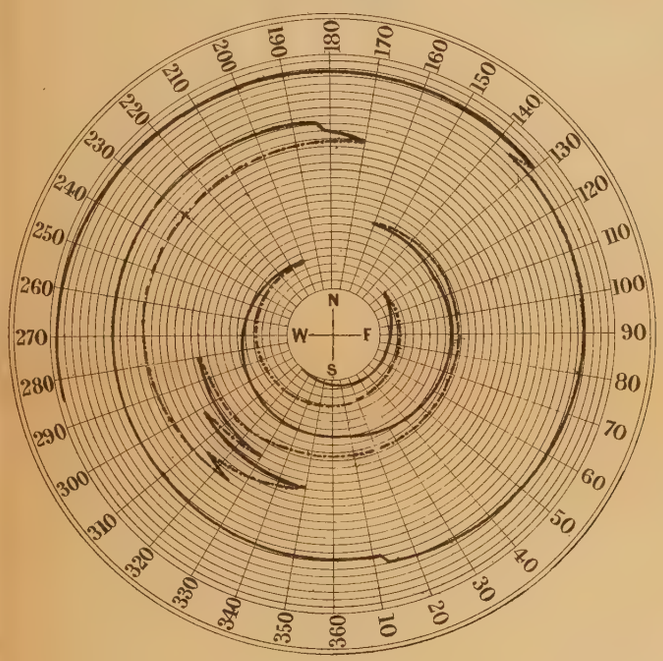
MEAN DIRECTIONS OF THE WIND

SEPR 1858

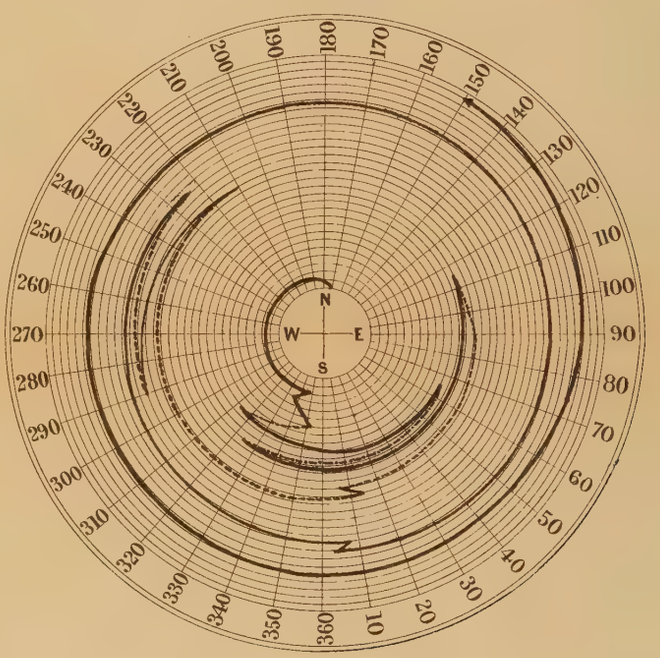
OCTR 1858



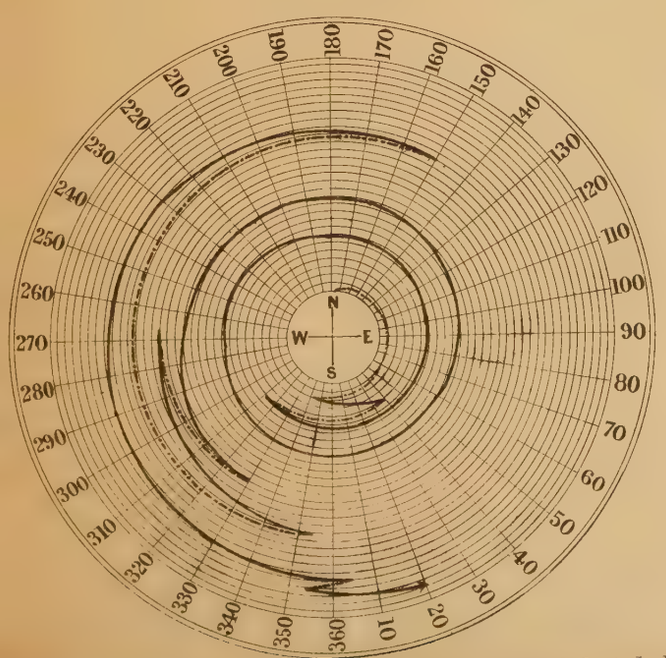
NOVR 1858.



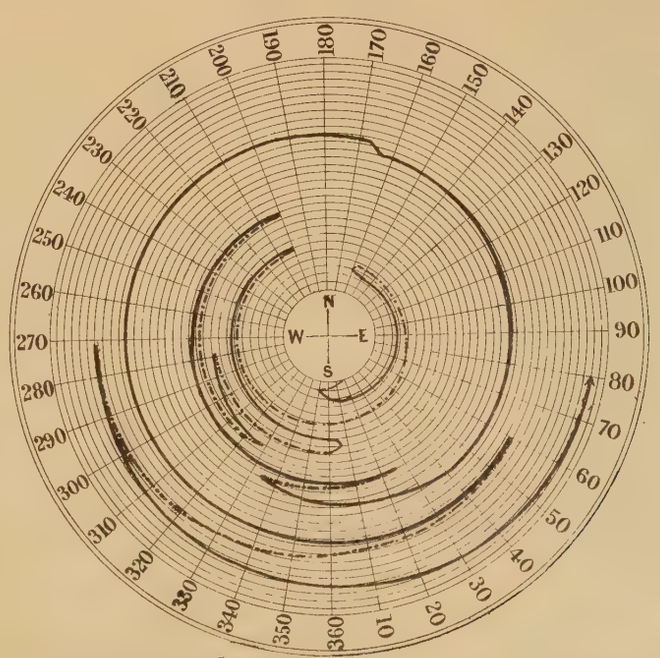
DECR 1858



JANY 1859.



FEBY 1859

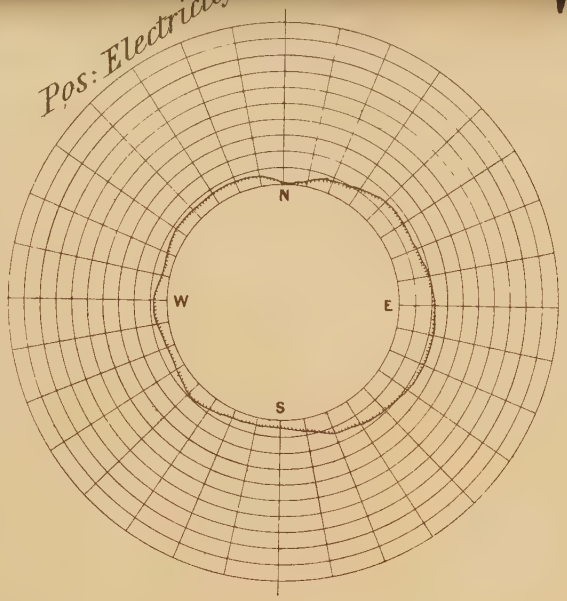


Lithographed at the Department of Lands & Survey, Melbourne 11th Dec. 1860

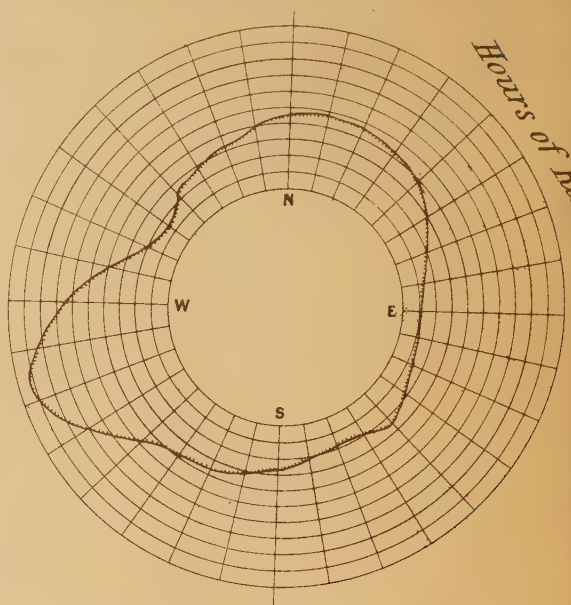
WIND ROSES

1858 - 1859

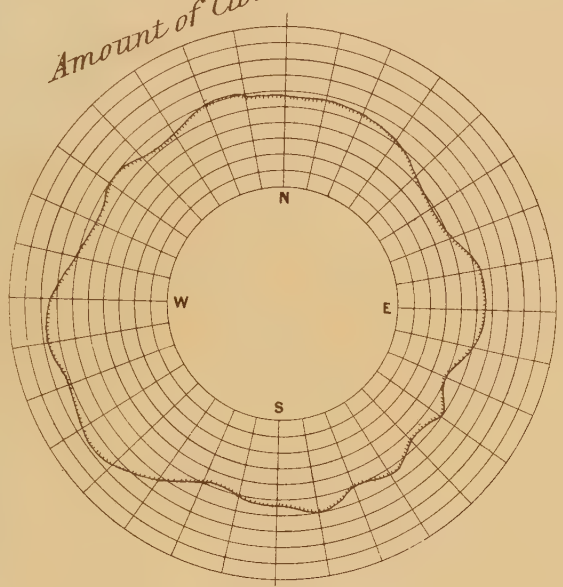
Pos: Electricity



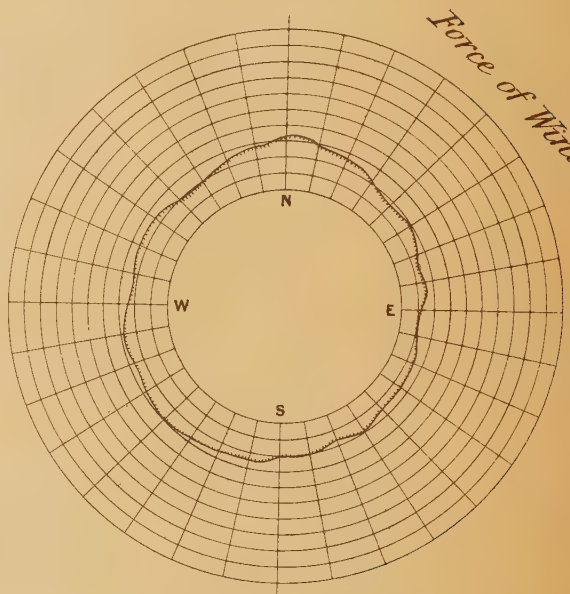
Hours of Rain



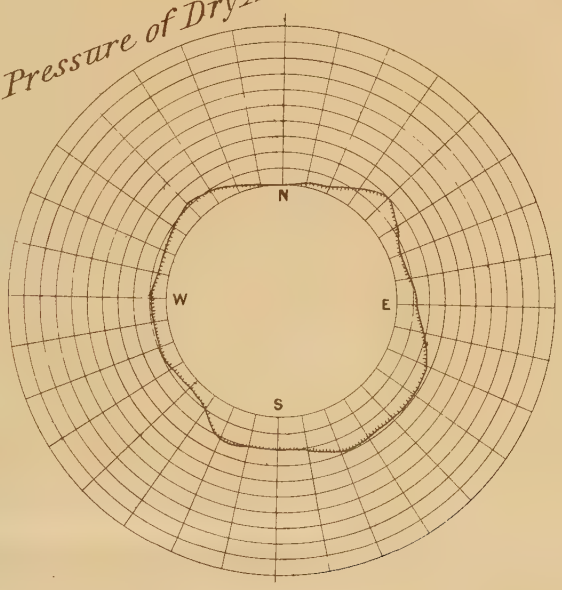
Amount of Cloud



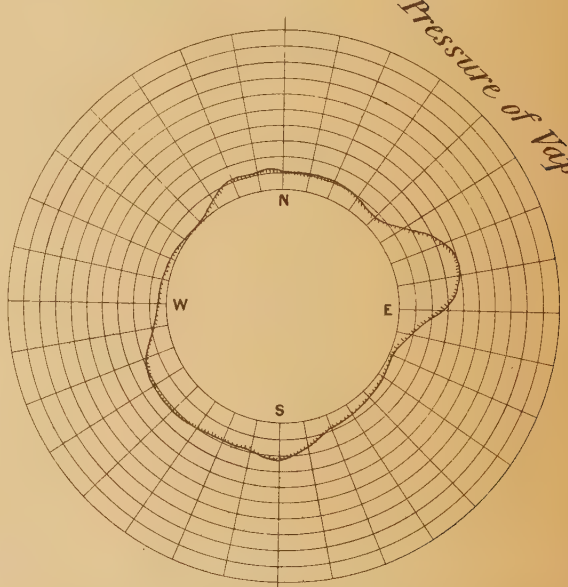
Force of Wind



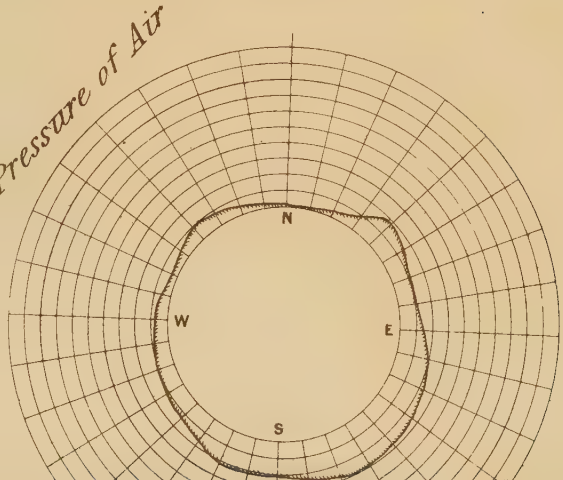
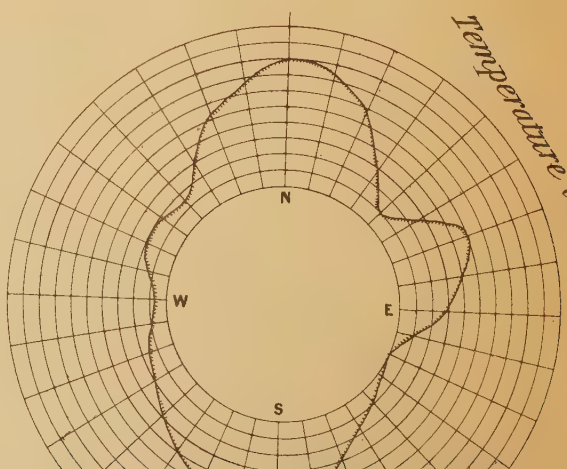
Pressure of Dry Air



Pressure of Vapor



Pressure of Air



Temperature of Air